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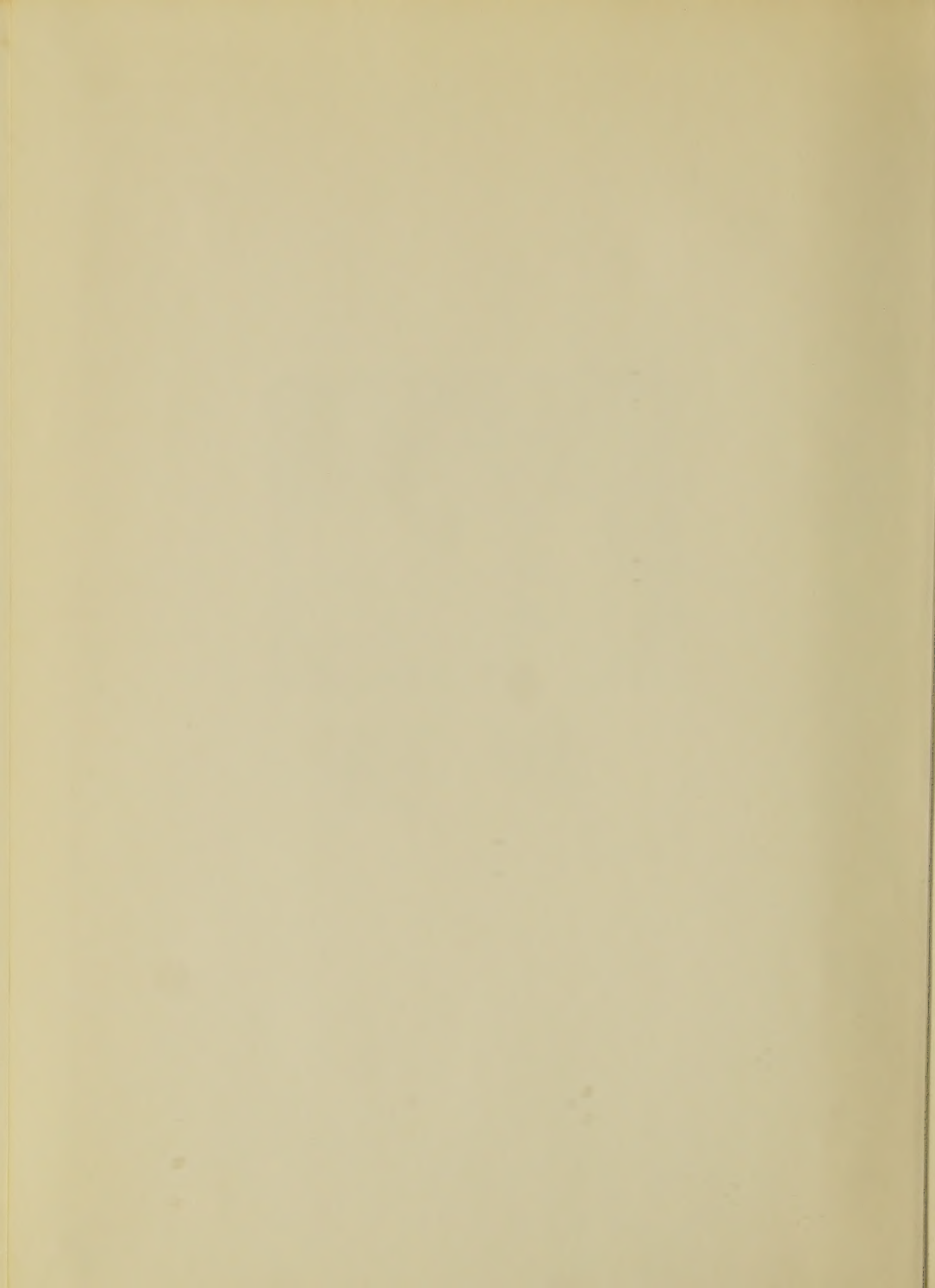
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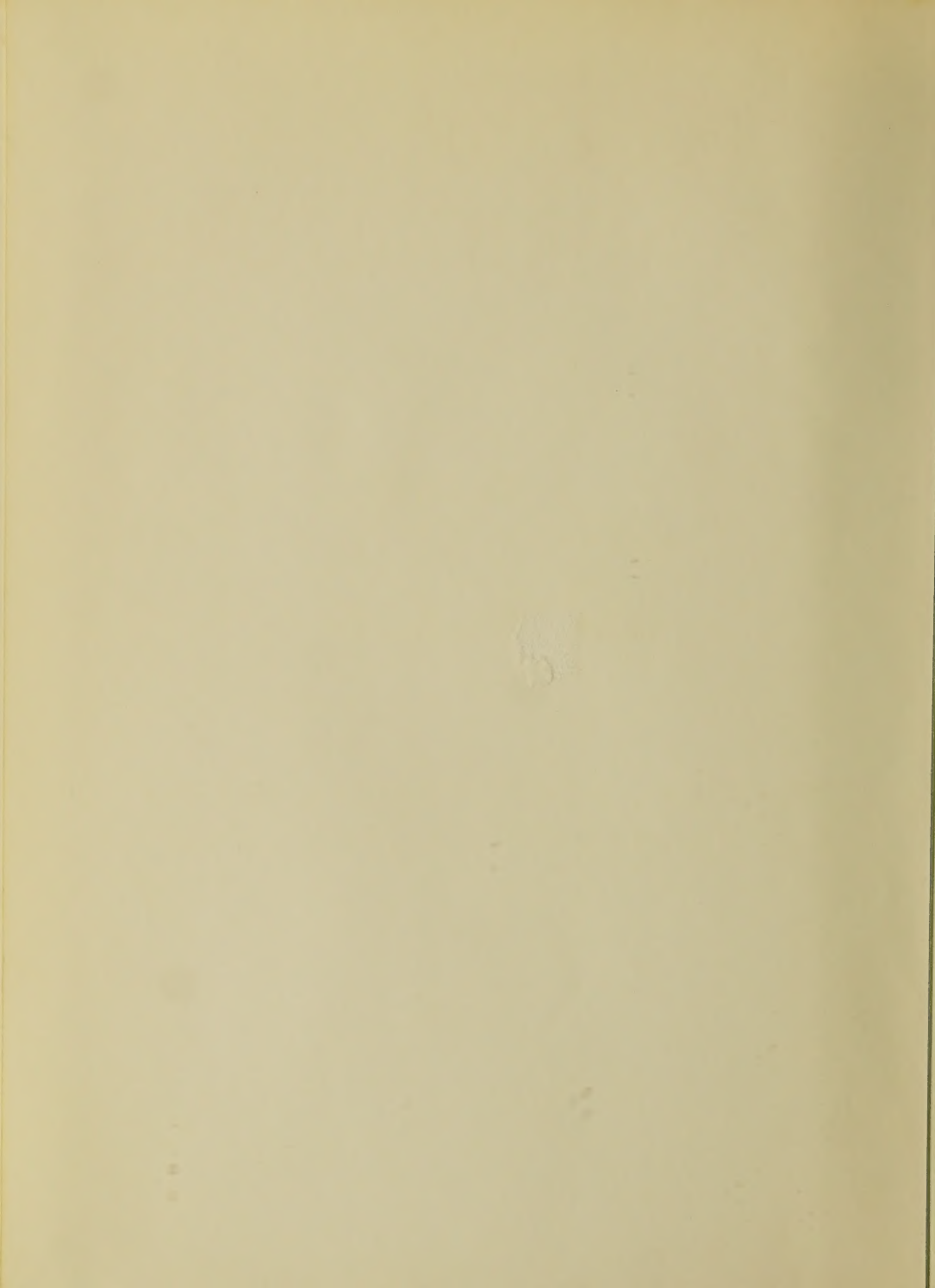












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# BIBLIOGRAPHY OF AGRICULTURE

Vol. 33

January 1969

1080

No. 1

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Literature received more than one year after publication is generally not indexed. Exceptions are made for important scientific publications.

Indexing of articles on the processing of agricultural products is limited to those on primary processing.

Unsigned articles and those signed with pseudonyms or initials, editorials, letters to the editor, and columns appearing regularly, are omitted.

For more detailed coverage of the literature on pests and their control, please consult the Pesticides Documentation Bulletin, a biweekly publication of the National Agricultural Library.

## FORMAT

The Bibliography is a classified arrangement of references under the following subjects:

USDA Publications

State Agricultural Experiment Station Publications

State Agricultural Extension Service Publications

Agricultural Economics and Rural Sociology

Agricultural Products

Animal Industry

Engineering

Entomology

Food and Human Nutrition

Forestry

Plant Science

Soils and Fertilizers

Miscellaneous

The classified section is followed by the listing of:

New Periodicals and Serials

Translations

Food and Agriculture Organization of the United Nations (FAO) Publications

The last section of each monthly issue, except November, is the Author and Subject index for that issue.

For monographs the title is shown in the original language, followed by the English version. Titles of foreign language articles in serial publications are given in English only; the language of the text is shown in abbreviated form in parentheses at the end of the title. The following notations are used:

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Abbreviated names of the publications cited prior to July 1, 1964 are those from USDA Miscellaneous Publication 765—List of Serials Currently Received in the Library of the United States Department of Agriculture, July 1, 1957. Abbreviated names of all new periodical titles received after July 1, 1964, are taken from the American Standard for Periodical Title Abbreviations. As time allows, abbreviations set up for titles before that date will be converted to the new form.

The presence of the term "Ref." in the citation indicates that the article contains ten or more references to the literature.

Following each citation is the Library classification number which should be used when requesting loans or reproduction of articles.

## FREQUENCY OF PUBLICATION

The Bibliography is published monthly. The December issue is devoted wholly to a subject index and the cumulated Personal and Organizational index to the preceding eleven issues.



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## CHECKLISTS

Checklists of publications of the U. S. D. A., State Agricultural Experiment Stations, and State Agricultural Extension Services are prepared for the convenience of those who wish to follow the literature from these sources. All such publications are included also in the classified section and indexed in the author and subject indexes.

Abstracts are included with citations of U. S. D. A. publications, provided they are brief and are received with the original publication.

U. S. D. A. PUBLICATIONS

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Agricultural Economic Reports

- 1 Sokolow, A. D. GOVERNMENTAL RESPONSE TO URBANIZATION; THREE TOWNSHIPS ON THE RURAL-URBAN GRADIENT. U. S. D. A. Agr. Econ. Rep. 132,58 p. May 1968. A281.9 Ag8A  
Local government in Michigan.  
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- 2 Stinson, T. F. THE EFFECTS OF TAXES AND PUBLIC FINANCING PROGRAMS ON LOCAL INDUSTRIAL DEVELOPMENT; A SURVEY OF THE LITERATURE. U. S. D. A. Agr. Econ. Rep. 133,24 p. May 1968. A281.9 Ag8A  
Chiefly rural industry.  
Summary, p.IV.

Agriculture Handbooks

- 3 McColloch, L. P. MARKET DISEASES OF TOMATOES, PEPPERS, AND EGGPLANTS. U. S. D. A. Agr. Handbook 28,rev.,74 p. Feb.1968. 1 Ag84Ah
- 4 U. S. Agricultural Research Serv. Entomology Research Div. SUGGESTED GUIDE FOR THE USE OF INSECTICIDES TO CONTROL INSECTS AFFECTING CROPS, LIVESTOCK, HOUSEHOLDS, STORED PRODUCTS, FORESTS, AND FOREST PRODUCTS--1968. U. S. D. A. Agr. Handbook 331,rev.,273 p. June 1968. 1 Ag84Ah
- 5 U. S. Agricultural Research Service, Market Quality Research Division, and U. S. Forest Service, Forest Pest Control Division, and Forest Protection Research Division, cooperating.
- 6 U. S. Agricultural Research Serv. BARLEY: ORIGIN, BOTANY, CULTURE, WINTERHARDINESS, GENETICS, UTILIZATION, PESTS. U. S. D. A. Agr. Handbook 338,127 p.,map. Ref. Mar.1968. 1 Ag84Ah
- 7 Wiebe, G. A. INTRODUCTION OF BARLEY INTO THE NEW WORLD. U. S. D. A. Agr. Handbook 338:2-8, map. Mar.1968. 1 Ag84Ah  
Cultivation.

- 7 Harlan, J. R. ON THE ORIGIN OF BARLEY. U. S. D. A. Agr. Handbook 338:9-31. Ref.,p.29-31. Mar.1968. 1 Ag84Ah  
History, chiefly of cultivation.
- 8 Reid, D. A., Shands, R. G., and Suneson, C. A. CULTURE OF BARLEY IN THE UNITED STATES. U. S. D. A. Agr. Handbook 338:32-38, map. Mar. 1968. 1 Ag84Ah
- 9 Shaw, W. C. WEEDS IN BARLEY AND THEIR CONTROL. U. S. D. A. Agr. Handbook 338:39-42. Mar.1968. 1 Ag84Ah  
Chemical and cultural.
- 10 Moseman, J. G. BARLEY DISEASES AND THEIR CONTROL. U. S. D. A. Agr. Handbook 338:45-60. Mar.1968. 1 Ag84Ah
- 11 Reid, D. A., and Wiebe, G. A. TAXONOMY, BOTANY, CLASSIFICATION, AND WORLD COLLECTION. U. S. D. A. Agr. Handbook 338:61-84. Ref. Mar.1968. 1 Ag84Ah  
Barley.
- 12 Price, P. B. INTERSPECIFIC AND INTERGENERIC CROSSES OF BARLEY. U. S. D. A. Agr. Handbook 338:85-95. Ref.,p.92-95. Mar.1968. 1 Ag84Ah  
Hybrids.
- 13 Wiebe, G. A. BREEDING. U. S. D. A. Agr. Handbook 338:96-104. Ref. Mar.1968. 1 Ag84Ah  
Techniques useful for barley.
- 14 Wiebe, G. A. GENETICS. U. S. D. A. Agr. Handbook 338:105-111. Ref. Mar.1968. 1 Ag84Ah  
Barley.
- 15 Dickson, A. D. BARLEY FOR MALTING AND FOOD. U. S. D. A. Agr. Handbook 338:112-120. Ref. Mar.1968. 1 Ag84Ah
- 16 Olien, C. R. PHYSIOLOGY OF WINTERHARDINESS IN BARLEY. U. S. D. A. Agr. Handbook 338:121-127. Ref. Mar.1968. 1 Ag84Ah
- 17 GRASSES AND LEGUMES FOR SOIL CONSERVATION IN THE PACIFIC NORTHWEST AND GREAT BASIN STATES. U. S. D. A. Agr. Handbook 339, 69 p. Apr.1968. 1 Ag84Ah

Agriculture Information Bulletins

- 18 U. S. Dept. of Agriculture. Economic Research Serv. FARM COSTS AND RETURNS: COMMERCIAL FARMS BY TYPE, SIZE, AND LOCATION. U. S. D. A. Agr. Inform. Bull. 230,rev.,77 p.,map. Sept. 1968. 1 Ag84Ab

Farmers' Bulletins

- 19 Timmins, M. S. SAFE USE AND STORAGE OF FLAMMABLE LIQUIDS AND GASES ON THE FARM. U. S. D. A. Farmers' Bull. 2156,rev.,12 p. June 1968. 1 Ag84F  
Gasoline, kerosene, LP gas, and other petroleum products are dangerous. Careless use or improper storage of these flammable liquids and gasses can result in a serious fire or explosion.  
Every year, hundreds of persons die in such fires and explosions on farms; many more suffer serious injury; millions of dollars' worth of property is damaged or destroyed.  
You can greatly reduce the possibility of fire or explosion when using or storing flammable liquids or gases by observing proper precautions. You can further safe-guard life and property by maintaining suitable fire-fighting equipment on your farm.
- 20 U. S. Agricultural Research Serv. Animal Husbandry Research Div. SWINE PRODUCTION. U. S. D. A. Farmers' Bull. 2166,rev.,30 p. Apr.1968. 1 Ag84F

- 21 U. S. Agricultural Research Service. Crops Research Division. CONTROLLING TOMATO DISEASES. U. S. D. A. Farmers' Bull. 2200, slightly rev., 10 p. July 1968. 1 Ag84F

Some diseases that commonly affect tomatoes are fusarium wilt, verticillium wilt, damping-off, septoria leaf spot, gray leaf spot, early blight, late blight, bacterial spot, anthracnose, soil rot, blossom-end rot, and tobacco (tomato) mosaic.

Other disorders that commonly affect tomatoes are catface and 2,4-D injury.

Following are ways in which you can prevent or reduce losses from disease:

- Plant resistant varieties if they are available.
- Treat seed with a fungicide.
- Apply fungicides to foliage and fruit.
- Rotate crops.

- 22 Garver, H. L. PLUMBING FOR THE HOME AND FARMSTEAD. U. S. D. A. Farmers' Bull. 2213, slightly rev., 20 p. Mar. 1968. 1 Ag84F

#### Foreign Agricultural Report

- 23 Schertz, L. P. CEREAL POLICIES IN THE UNITED KINGDOM, 1870-1967. U. S. Foreign Agr. Serv. Foreign Agr. Rep. 130, 79 p. Mar. 1968. 1.943 F763

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#### Foreign Agricultural Economic Reports

- 24 Christensen, R. P. TAIWAN'S AGRICULTURAL DEVELOPMENT: ITS RELEVANCE FOR DEVELOPING COUNTRIES TODAY. U. S. D. A. Foreign Agr. Econ. Rep. 39, 92 p. Apr. 1968. 1 A281.9 Ag8F

Summary, p.VII-VIII.

- 25 Mackie, A. B., Full, T. E., and Falck, J. E. WORLD TRADE IN SELECTED AGRICULTURAL COMMODITIES, 1951-65. V. OILSEEDS, OIL NUTS, AND ANIMAL AND VEGETABLE OILS. U. S. D. A. Foreign Agr. Econ. Rep. 47, 340 p. Ref. Aug. 1968. 1 A281.9 Ag8F

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#### Home and Garden Bulletins

- 26 U. S. Agricultural Research Serv. Human Nutrition Research Div. FAMILY FARE; FOOD MANAGEMENT AND RECIPES. U. S. D. A. Home Gard. Bull. 1, rev., 80 p. Apr. 1968. 1 Ag84Hg

Meal planning and food purchasing.

- 27 Reid, W. J. CABBAGE INSECTS; HOW TO CONTROL THEM IN THE HOME GARDEN. U. S. D. A. Home Gard. Bull. 44, slightly rev., 8 p.-folder. Apr. 1968. 1 Ag84Hg

- 28 Cathey, H. M. GROWING FLOWERING PERENNIALS. U. S. D. A. Home Gard. Bull. 114, rev., 32 p. July 1968. 1 Ag84Hg

Abstract, p.3.

- 29 U. S. Consumer and Marketing Serv. HOW TO BUY BEEF STEAKS. U. S. D. A. Home Gard. Bull. 145, 15 p. Feb. 1968. 1 Ag84Hg

Cuts and grades.

- 30 U. S. Agricultural Research Serv. Human Nutrition Research Div. BAKING FOR PEOPLE WITH FOOD ALLERGIES. U. S. D. A. Home Gard. Bull. 147, 12 p. July 1968. 1 Ag84Hg

#### Leaflets

- 31 U. S. Agricultural Research Service. Crops Research Division. BLIGHT OF PEARS, APPLES AND QUINCES. U. S. D. A. Leaflet. 187, rev., 6 p.-folder. July 1968. 1 Ag84L

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- 153 Barrows, J. S. PREVENTING FIRE FROM THE SKY. U. S. D. A. Yearbook Agr. 1968:217-223. 1 Ag84Y  
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- 157 Crow, W. C. PUTTING MORE GO-GO IN CAR-GO-CONTAINERS AND WORLD TRADE. U. S. D. A. Yearbook Agr. 1968:240-247. 1 Ag84Y
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- 159 Chandler, R. F. DWARF RICE—A GIANT IN TROPICAL ASIA. U. S. D. A. Yearbook Agr. 1968:252-255. 1 Ag84Y  
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- 163 Woodroof, J. G. FROZEN FOODS—NEW TECHNIQUES. U. S. D. A. Yearbook Agr. 1968:267-271. 1 Ag84Y
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- 168 Webb, B. H. A NEW LOW-FAT CHEESE. U. S. D. A. Yearbook Agr. 1968:289-293. 1 Ag84Y  
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- 169 Fluno, J. A., and Weidhaas, D. E. SAVING YOUR SKIN—INSECT REPELLENTS. U. S. D. A. Yearbook Agr. 1968:293-296. 1 Ag84Y
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- 171 Naghshi, J., and Filachione, E. M. MORE SERVICEABLE LEATHER. U. S. D. A. Yearbook Agr. 1968:299-303. 1 Ag84Y  
Leather types and uses and tanning with glutaraldehyde.
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- 174 Perdue, R. E. TREE HAS POTENTIAL FOR TREATING CANCER. U. S. D. A. Yearbook Agr. 1968:310. 1 Ag84Y  
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- 175 Kyame, G. J., and Lofton, J. T. COOL AND CAREFREE COTTON SEERSUCKER. U. S. D. A. Yearbook Agr. 1968:311-313. 1 Ag84Y  
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- 176 Dimler, R. J. DEXTRAN HELPS SAVE LIVES. U. S. D. A. Yearbook Agr. 1968:314-317. 1 Ag84Y  
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- 178 Eickner, H. W. WOOD CAN PROTECT YOU FROM FIRE. U. S. D. A. Yearbook Agr. 1968:321-324. 1 Ag84Y  
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- 179 Leverton, R. M. VERY IMPORTANT PEOPLE. U. S. D. A. Yearbook Agr. 1968:324-328. 1 Ag84Y  
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- 181 Patterson, W. I. SAFE MILK IN THE ATOMIC AGE. U. S. D. A. Yearbook Agr. 1968:331-335. 1 Ag84Y  
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Fruit breeding program of the Department of Agriculture.
- 183 Stodola, F. H. PENICILLIN: BREAKTHROUGH TO THE ERA OF ANTIBIOTICS. U. S. D. A. Yearbook Agr. 1968:339-344. 1 Ag84Y  
History of the development of the drug.



- 194 Sullivan, W. N. GETTING THE BEAT ON RHYTHM—NEW WAY TO PEST CONTROL. U. S. D. A. Yearbook Agr. 1968:345-348. 1 Ag84Y  
Research on insect biological clocks.
- 185 Goebel, M. T. A WATER REPELLANT THROUGH SHEER CHANCE. U. S. D. A. Yearbook Agr. 1968:348-351. 1 Ag84Y  
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- 196 Cook, H. T. PUTTING THE HEAT ON PEACHES AND PAPAYAS. U. S. D. A. Yearbook Agr. 1968:351-354. 1 Ag84Y  
Hot water treatment to control decay.
- 197 Byrne, R. J. SLEEPING SICKNESS WAKES AGAIN. U. S. D. A. Yearbook Agr. 1968:355-359. 1 Ag84Y  
Equine encephalitis.
- 198 Crane, T. R. KNOCK ON ANY DOOR: CONSUMER RESEARCH. U. S. D. A. Yearbook Agr. 1968:359-363. 1 Ag84Y  
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- 189 Allaway, W. H. SELENIUM—VITAL BUT TOXIC NEEDLE IN THE HAYSTACK. U. S. D. A. Yearbook Agr. 1968:363-368, map. 1 Ag84Y  
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- 190 Julian, L. M. AIDING MANKIND'S STRUGGLE AGAINST MUSCULAR DYSTROPHY. U. S. D. A. Yearbook Agr. 1968:368-371. 1 Ag84Y  
Study of muscular dystrophy in poultry and its importance in studying the disease in humans.
- 191 Freeman, O. L. SCIENTIFIC AGRICULTURE: KEYSTONE OF ABUNDANCE. U. S. D. A. Yearbook Agr. 1968:XLI-XLVI. 1 Ag84Y  
Research and programs of the U. S. Department of Agriculture.

#### AGRICULTURAL RESEARCH SERVICE

- 192 Tarte, R. FIRST RECORD OF THE OCCURRENCE OF *HETERODERA ROSTOCHIENSIS* IN PANAMA. Plant Dis. Rep. 52(8):587-588, map. Aug. 1968. 1.9 P69P  
A population of the golden nematode of potato, *Heterodera rostochiensis* Wollenweber 1923, was discovered in August 1967 in the potato-growing region of Cerro Punta in the Republic of Panama.
- 193 Smiley, J. H., and Flowers, R. A. TOBACCO DISEASES IN KENTUCKY IN, 1967. Plant Dis. Rep. 52(8):589. Aug. 1968. 1.9 P69P  
Includes injuries.  
Low temperatures and above-normal rainfall prevailed in Kentucky during the spring and early summer of 1967. These conditions were favorable for development of certain tobacco diseases.
- 194 Bruehl, G. W. ECOLOGY OF CEPHALOSPORIUM [GRAMINEUM] STRIPE DISEASE OF WINTER WHEAT IN WASHINGTON. Plant Dis. Rep. 52(8):590-594, map. Ref. Aug. 1968. 1.9 P69P  
Cephalosporium stripe disease of winter wheat, incited by *Cephalosporium gramineum*, is most prevalent in Washington in soil sites having high water content during late fall and winter. Stripe is most common in the higher, subhumid periphery of the Washington wheat area, the region with greatest rainfall. It is rare or absent in the warmer, drier, better drained soils. Excessive soil and surface water from October through December favors development of the Hymenulata stage of the pathogen, sporulation, dispersal of spores, root injuries from heaving soil, and thus ingress of the pathogen into wheat roots. Above normal precipitation in November and December was associated with disease severity.  
The occurrence of *Cephalosporium* stripe in scattered ecological niches indicates that the pathogen is not a recent introduction into the region, and that the large uninfested central wheat area is ecologically inhospitable to the pathogen.  
A lack of adequate rotation and early seeding favor the disease.
- 195 Nariani, T. K. ENATION LEAF CURL OF TOMATO. Plant Dis. Rep. 52(8):595-596. Aug. 1968. 1.9 P69P  
A leaf curl disease of tomato characterized by curling, twisting and rolling of leaves and accompanied by dark green enations on the veins on the undersurface of the leaflets was found to be graft-transmissible. The causal virus, which was transmitted by the sweetpotato whitefly (*Bemisia tabaci* (Gen.), was transmissible to tobacco, *Datura stramonium*, and *Capsicum annuum* and is considered to be a strain of tobacco leaf curl virus (*Nicotiana virus 10*).
- 196 Koenigs, J. W. CONTROL OF FUSIFORM RUST ON SOUTHERN PINES IN NURSERIES. Plant Dis. Rep. 52(8):597-599. Ref. Aug. 1968. 1.9 P69P  
In a slide germination test ferbam prevented germination of sporidia of *Cronartium fusiforme* at 1/6 the concentration usually applied in the nursery. With the use of a new method, telia germinated and sporidia abjected and germinated in 4. 8-6. 0 hours, or about 1/3 to 1/2 the time previously reported. Seedlings added up to 0. 5 inch of new terminal growth in 4 days. Ferbam seems to be an effective protectant, and occasional lapses in rust control with the current control recommendations apparently originate from failure to recognize the shorter duration of stages of the life cycle and the rapidity of seedling growth. These factors suggest that seedlings should be sprayed more frequently when weather conditions are favorable for rust infection or when they are growing rapidly.
- 197 Pillai, S. K., and Hildebrandt, A. C. GERANIUM PLANTS DIFFERENTIATED IN VITRO FROM STEM TIP AND CALLUS CULTURES. Plant Dis. Rep. 52(8):600-601. Aug. 1968. 1.9 P69P  
Propagating without virus transmission.
- 198 Singh, R. S., and Gröver, R. K. SOOTY MOLD OF COTTON AND OTHER HOSTS CAUSED BY *MICROXYPHIELLA HIBISCIFOLIA* IN NORTH INDIA. Plant Dis. Rep. 52(8):602-604. Aug. 1968. 1.9 P69P  
*Microxyphiella hibiscifolia* was collected from the leaves of cotton (*Gossypium arboreum* and *G. hirsutum*), *Hibiscus rosa-sinensis*, *H. mutabilis*, *Ficus glomerata* and *Pennisetum typhoides* from various localities of the Punjab and Harayana states of north India. The lesions were restricted to nectar glands on the veins of cotton and *H. rosa-sinensis* leaves; on 2 leaf auricles in *P. typhoides*; and irregularly distributed on *F. glomerata* and *H. mutabilis* leaves. Morphologically the pathogen from all the hosts was similar. Isolated from cotton infected cotton and *H. rosa-sinensis* and vice versa, whereas others were host-specific. The pathogen lost its viability on cotton leaves in 20-22 weeks while it was present in nature all the year round on *H. rosa-sinensis* leaves which are suspected to provide inoculum for primary infection of cotton. Pure culture of cotton isolate grew best on Richard's and potato-dextrose broth while pycnidial formation was maximum on potato-dextrose broth and asparagine-glucose-peptone nutrient solution.
- 199 Kline, D. M., and Nelson, R. R. OCCURRENCE IN *COCHLIOBOLUS CARBONUM* OF CAPACITIES TO BLIGHT GRAMINEOUS HOSTS. Plant Dis. Rep. 52(8):605-607. Aug. 1968. 1.9 P69P  
One hundred and forty-two isolates of *Cochliobolus carbonum* Nelson from diverse source hosts and geographic origins were tested for capacities to induce lesion or blight reactions on 28 gramineous test species. Thirty-eight isolates induced blight reactions on one or more test species. Nineteen of 28 test species exhibited blight reactions. Eighteen isolates induced blight reactions on from 2 to 8 test species. The remaining 20 isolates blighted only a single species. Eighteen different isolates blighted *Bouteloua curtipendula*; one isolate blighted each of 7 other test species; and from 2 to 9 isolates blighted each of the remaining 11 blight testers. All other isolate-host species interactions resulted in lesion reactions. The apparent host specificity of blight capacities and the differences among the isolates in capacities to blight different test species indicate that the capacities of *C. carbonum* to induce blight reactions upon gramineous host species are conditioned by a number of genes.



- 200 Joffe, A. Z. MYCOFLORA OF SURFACE-STERILIZED GROUNDNUT KERNELS. Plant Dis. Rep. 52(8):608-611. Aug. 1968. 1.9 P69P  
The mycoflora was determined of fresh and stored groundnut kernels removed from disinfected pods without further disinfection, and of kernels taken from similar pods but disinfected after their removal. Mercuric chloride (0.1%), served for disinfection. Eighty-three fungal species were found on all these kernels, with 35 species (including *Aspergillus flavus*) surviving kernel disinfection. Forty-six of the species found do not appear to have been recorded previously on groundnut pods or kernels.  
Although the number of colonies yielded by most species was predictably larger before kernels were disinfected, four of the more common species were more frequent after disinfection: *Aspergillus versicolor*, *Fusarium solani*, and *Penicillium rubrum* on fresh kernels, and *Aspergillus niger* on stored kernels.  
The high incidence of *A. niger* in stored kernels that were disinfected, as compared with those that were not, is taken to indicate a selective removal of antagonists of this species by mercurial disinfection.
- 201 Grogan, C. O., and Boling, M. PROPOSED DIPLOIDA STALK ROT INOCULATING TECHNIQUE FOR MAIZE. Plant Dis. Rep. 52(8):611-612. Aug. 1968. 1.9 P69P  
The use of a CO<sub>2</sub>-powered BB pistol appears promising as a technique for artificial inoculation of maize plants for reaction to *Diplodia stalk rot*. The method is rapid and reliable.
- 202 Tachibana, H. RHIZOCTONIA SOLANI ROOT ROT EPIDEMIC OF SOYBEANS IN CENTRAL IOWA 1967. Plant Dis. Rep. 52(8):613-614, map. Aug. 1968. 1.9 P69P  
203 Horst, R. K., and Hoitink, H. A. J. OCCURRENCE OF CYLINDROCLADIUM BLIGHTS ON NURSERY CROPS AND CONTROL WITH FUNGICIDE 1991 ON AZALEA. Plant Dis. Rep. 52(8):615-617. Aug. 1968. 1.9 P69P  
Cylindrocladium scoparium and C. floridanum caused severe losses in azalea, rhododendron, lilac and sweet-william cuttings and liners in Ohio and Florida. Of 16 fungicide drenches tested, only 1-(butylcarbamoyl)-2-benzimidazole carbamic acid, methyl ester (Fungicide 1991) gave 100% control of the disease. No control was obtained with 11 fungicides in cutting-soak trials. Calcium added in the form of dolomite, gypsum or hydrated lime did not alter disease levels significantly. Azaleas were most susceptible to disease at 75-80°F under high moisture conditions.
- 204 Wagon, H. K., and others. INVESTIGATIONS OF CHERRY RASP LEAF DISEASE IN CALIFORNIA. Plant Dis. Rep. 52(8):618-622. Ref. Aug. 1968. 1.9 P69P  
J. T. Taylor, H. E. Williams, and A. C. Weiner, joint authors.  
Cherry rasp-leaf virus disease has been noted in eight California counties. Diagnostic leaf symptoms in orchard trees appeared first in the trunk area and gradually progressed upward, suggesting that infection occurs in the roots. Two cherry trees, both originally propagated as healthy mahaleb seedlings in infested soil from around infected orchard trees, developed rasp-leaf virus disease symptoms. Rasp-leaf virus was recovered in a cherry tree when pollen from an infected cherry tree was placed under the bark. Nematodes, including *Xiphinema americana* Cobb, *Criconeoides* sp., *Helicotylenchus* sp., and *Pratylenchus* sp., were present in the soil collected around rasp-leaf infected orchard trees.
- 205 Harding, P. R. COMPARISON OF FUNGICIDE 1991, THIABENDAZOLE, AND SODIUM ORTHOPHENYLPHENATE FOR CONTROL OF PENICILLIUM (DIGITATUM AND P. ITALICUM) MOLDS OF POST-HARVEST CITRUS FRUITS. Plant Dis. Rep. 52(8):623-625. Ref. Aug. 1968. 1.9 P69P  
Packing house tests were run to compare 500 ppm 1-(butylcarbamoyl)-2-benzimidazole carbamic acid, methyl ester (Fungicide 1991), 500 ppm thiabendazole, and 2% sodium orthophenylphenate tetrahydrate applied in shipping wax emulsion for control of *Penicillium* mold decay in "Temple" tangors, "Navel" oranges, "Minneola" tangels, "Wilking" mandarins, and "Dancy" tangerines. There was no significant difference in effectiveness between the three treatments, with the Temple tangor, the strongest type of fruit used in the tests. With the other types of fruit, Fungicide 1991 was not consistently better than thiabendazole; both treatments, however, were consistently better than the sodium orthophenylphenate treatment.
- 206 Singh, K., and Misra, S. R. OCCURRENCE OF A CYST [HETERODERA] NEMATODE ON SUGARCANE IN INDIA. Plant Dis. Rep. 52(8):626. Aug. 1968. 1.9 P69P
- 207 Katcho, Z. A., and Allow, J. M. DAGGER NEMATODES, XIPHINEMA INDEX, ON GRAPEVINES IN IRAQ. Plant Dis. Rep. 52(8):626-627. Aug. 1968. 1.9 P69P
- 208 Hocking, D. STEM CANKER AND PINK STAIN OF TEAK IN TANZANIA ASSOCIATED WITH FUSARIUM SOLANI. Plant Dis. Rep. 52(8):628-629. Ref. Aug. 1968. 1.9 P69P  
*Fusarium solani* was consistently isolated from collar and stem cankers and from pink-stained wood of mature teak in Tanzania. Isolates killed seedlings when inoculated into collar wounds, resulting in pink-stained zones. This record extends the now broad host range of *F. solani* as a canker organism.
- 209 Schroeder, W. T., and Providenti, R. SYSTEMIC CONTROL OF POWDERY MILDEW ON CUCURBITS WITH FUNGICIDE 1991 APPLIED AS SOIL DRENCHES AND SEED TREATMENTS. Plant Dis. Rep. 52(8):630-632. Aug. 1968. 1.9 P69P  
Seed and soil treatments with 1-(butylcarbamoyl)-2-benzimidazole carbamic acid, methyl ester (Fungicide 1991) provided a systemic control of powdery mildew of squash and cucumber in the greenhouse commensurate with dosage. Application to young plants appeared most effective. Restricted development of mildew on petioles and main veins of leaves, instead of colonies scattered at random over the leaf blade, characterized a diminution of an effective dosage. Primary development of scattered colonies on plants previously treated with effective dosages instead of the restricted pattern indicated a form of the fungus resistant to the systemic effects of the fungicide.
- 210 Niehaus, M. H. RELATIVE AMOUNTS OF STRIPE AND FLAG SMUT ON MERION KENTUCKY BLUEGRASS [POA PRATENSIS]. Plant Dis. Rep. 52(8):633-634. Aug. 1968. 1.9 P69P  
A "Merion" Kentucky bluegrass lawn was systematically sampled on four dates in 1967 for incidence of stripe smut (*Ustilago striiformis* (West.) Niessl) and flag smut (*Urocystis agropyri* (Preuss) Schroet.). Over the four dates stripe smut was found on 54.2% and flag smut on 45.2% of the infected leaves. Because both diseases produce the same symptoms, the sori were examined microscopically for identification. The fact that two disease organisms are causing what appears to be one disease may cause problems for plant breeders and those developing chemical controls.
- 211 Ross, E. W. SAND PINE [PINUS CLAUSSA], A NEW HOST OF FOMES ANNOSUS. Plant Dis. Rep. 52(8):635. Aug. 1968. 1.9 P69P
- 212 Bilisky, P. M., Funk, C. R., and Babinski, P. L. CONTROL OF STRIPE SMUT IN KENTUCKY BLUEGRASS [POA PRATENSIS] TURF WITH A SYSTEMIC FUNGICIDE. Plant Dis. Rep. 52(8):635-637. Aug. 1968. 1.9 P69P  
Evaluation trials with protective and systemic chemicals were conducted to determine their effectiveness against stripe smut (*Ustilago striiformis*). The chemicals were applied as drenches to heavily smutted "Merion" Kentucky bluegrass turf. The results indicated that a new systemic fungicide, 1-(butylcarbamoyl)-2-benzimidazole carbamic acid, methyl ester (Fungicide 1991), is an effective control for this disease in perennial turf.
- 213 Redfern, D. B., and Van Sickle, G. A. FOMES ANNOSUS IN EASTERN CANADA. Plant Dis. Rep. 52(8):638. Aug. 1968. 1.9 P69P  
Picea spp. and Pinus resinosa.
- 214 Cheo, P. C. CONTROL OF ARMILLARIA MELLEAE WITH SYSTEMIC CHEMICALS. Plant Dis. Rep. 52(8):639-641. Aug. 1968. 1.9 P69P  
Ornamental plants.  
Twenty systemic chemicals were tested as to their relative inhibitory effect to the growth of *Armillaria mellea* (Vahl, ex Fr.) Quel. on potato-dextrose agar. Cycloheximide was very effective; it produced a lethal dosage level to the fungus at 20 ppm. Another systemic chemical, 2,4-dichlorophenoxy-acetonitrile was also effective, and had a lethal dosage level at 50 ppm. Acrizane chloride showed high fungistatic effect on *A. mellea* at 10 ppm level. Dimethyl sulfoxide (DMSO) at 1% level in the medium showed some inhibitory effect to the growth of *A. mellea*, and complete inhibition at the 10% level.

215 Stewart, D. M., and Romig, R. W. PREVALENCE OF PHYSIOLOGIC RACES OF *PUCINIA GRAMINIS* F. SP. *AVENAE* AND *TRITICI* IN THE USA IN 1967. *Plant Dis. Rep.* 52(8):642-646. Aug. 1968. 1.9 P69P

Seven races were identified among 706 isolates from 578 collections of *Puccinia graminis* (Pers.) f. sp. *tritici* Eriks. & E. Henn. made on wheat, barley, rye, and grasses in 1967. Races 15B-2 (61%), 11 (14%), 151 (12%), and 38 (7%) accounted for 94% of the isolates identified. Race 56 declined to 4%, the smallest percentage since the early 1930's; and race group 11-32 and 151 were more prevalent than in the 2 preceding years. Some isolates of race 11 and 32 attack Selkirk; certain cultures of 32 also attack Chris, Crim, and North Dakota 363-1; some cultures of 151 attack Chris, Crim, and Manitou; and certain isolates of 38 are virulent on Chris, Manitou, and Polk.

Race 6AF of *P. graminis* (Pers.) f. sp. *avenae* Eriks. & E. Henn. predominated for the third consecutive year (72%), 6F (23%), 6AH (3%), but the virulent 6AFH was not found.

Wheat stem rust races identified on barley included 11, 15B-2, a variant of 15B, and three isolates of race 32. Certain barley isolates of race 32 attacked more varieties than others.

Race of 6F of oat stem rust was found in three aecial collections on barley.

216 Kolke, H. LEAF SCALD OF SUGARCANE IN CONTINENTAL UNITED STATES—A FIRST REPORT. *Plant Dis. Rep.* 52(8):646-649. Ref. Aug. 1968. 1.9 P69P

In July 1967, symptoms similar to those of leaf scald disease were observed on several sugarcane varieties in the World Sugarcane Collection, U. S. Sugarcane Field Station, Canal Point, Florida. Several bacterial isolates were obtained in pure cultures from shoots developed from diseased vegetative cuttings. Typical symptoms of leaf scald were reproduced on the indicator sugarcane varieties B. H. 10/12 and Co. 281 with a bacterium similar in growth characteristics on Wilbrink agar to *Xanthomonas albilineans*, the causal organism of leaf scald. The pathogenic bacterium reacted positively to *X. albilineans* antiserum, but not to *X. rubrilancea* (sugarcane red-strip disease) and *X. vasculorum* (sugarcane gumming disease) antisera. This is the first report of leaf scald disease of sugarcane in continental United States.

217 Hiratsuka, Y., and Maruyama, P. J. IDENTIFICATION OF PERIDERMIUM HARKNESSII IN EASTERN CANADA ON THE BASIS OF NUCLEAR CONDITION OF AECIOSPORE GERM TUBES. *Plant Dis. Rep.* 52(8):650-651. Ref. Aug. 1968. 1.9 P69P

A gall rust of *Pinus banksiana* from Quebec and New Brunswick was identified as *Peridermium harknessii* J. P. Moore (Cronartium oleosporoides Arth.) on the basis of the nuclear condition of aeciospore germ tubes. This confirms that this fungus is distributed across northern North America.

218 Wysong, D. S., and Willis, W. G. RECORDED DISTRIBUTION OF DUTCH ELM DISEASE WEST OF THE MISSISSIPPI RIVER AS OF 1967. *Plant Dis. Rep.* 52(8):652-653, map. Ref. Aug. 1968. 1.9 P69P

Ceratocystis ulmi.

219 Connor, S. R., and Heuberger, J. W. APPLE SCAB. V. EFFECT OF LATE-SEASON APPLICATIONS OF FUNGICIDES ON PREVENTION OF PERITHECIAL DEVELOPMENT BY VENTURIA INAEQUALIS. *Plant Dis. Rep.* 52(8):654-658. Ref. Aug. 1968. 1.9 P69P

Field tests were conducted for 4 years on previously unsprayed "Rome" apple trees to determine the effect of late-season spray applications of organic fungicides, considered to have an eradicant action, on the prevention of perithecial development by *Venturia inaequalis* (Cke.) Wint. All fungicides were applied to trees prior to leaf fall and the results evaluated the following spring. Data were obtained on: (a) reduction in the number of perithecia; (b) percentage germination of naturally-ejected ascospores found in perithecia that developed on treated leaves.

Results of these experiments indicate that: (a) three applications of 65% dodine, 1 lb/100 gal., inhibited perithecial development by 50%; (b) three applications of 65% dodine in combination with glyodin, 1 lb/8 oz./100 gal., inhibited perithecial development by 65 to 75%; (c) three

applications of 65% dodine in combination with dimethyl sulfoxide, 1 lb/2 qt/100 gal., gave an effect comparable to that of the dodine-glyodin combination; (d) phenylmercuric chloride (0.1%) prevented perithecial development by 100% after two and three applications in 1967-1968;

(e) one application of 50% active 1-(butylcarbamoyl)-2-benzimidazole carboxylic acid, methyl ester in combination with a surfactant, 1 lb/60 ml/100 gal., completely inhibited perithecial formation; (f) where perithecia were present on treated leaves, the ascospores were viable.

220 Dance, B. W. OBSERVATIONS ON THE DEVELOPMENT OF HYPOXYLON [PRUNATUM] CANKERS ON TREMBLING ASPEN [POPULUS TREMULOIDES]. *Plant Dis. Rep.* 52(8):659-661. Aug. 1968. 1.9 P69P

Typical cankers of Hypoxylon prunatum (Klotzsch) Cke. were induced on young trembling aspen trees by inoculating stems with mycelium in August. Development of infections seemed uncertain for about 24 months, but cankers subsequently appeared, developed rapidly, and killed the trees. Mature perithecia were present after 45 months. Cankers developed about equally above and below inoculation sites, and at maturity averaged 60 cm in length.

221 Singh, R. N. CURVULARIA [TRIFOLI GLADIOLI] DISEASE OF GLADIOLI IN INDIA. *Plant Dis. Rep.* 52(8):662. Aug. 1968. 1.9 P69P

222 Singh, R. N., and Saksena, H. K. BACTERIAL BLIGHT DISEASE OF PADDY—SYMPTOMATOLOGY. *Plant Dis. Rep.* 52(8):663-664. Aug. 1968. 1.9 P69P

Studies on the symptoms of bacterial blight disease of paddy, caused by *Xanthomonas oryzae* (Ueyeda & Ishiyama) Dowd., were made under varying sets of field conditions in order to characterize further the leaf blight symptom described by Srivastava and Rao in 1966. It is concluded that this disease affects the plant at every stage of its development. The incubation period of the bacterium varies from 5 to 10 days depending upon age of the plant. Affected younger plants have poor root systems, less tillering, and stunted growth. If they develop ear heads at all, there are fewer of them and they contain much less grain. Severely diseased young seedlings show albino symptoms and may even die. The water exudation system of diseased plants is filled with the causal bacteria. The advancing edge of the marginal blight rapidly covers most of the leaf area crosswise and lengthwise, and always shows a wavy outline.

223 Sinclair, J. B. ERADICATION OF CITRUS CANKER FROM LOUISIANA. *Plant Dis. Rep.* 52(9):667-670. Ref. Sept. 1968. 1.9 P69P

*Xanthomonas citri*.

224 Marsh, P. B., and Simpson, M. E. OCCURRENCE OF FIBER CONTAINING FLUORESCENT SPOTS ASSOCIATED WITH ASPERGILLUS FLAVUS BOLL ROT IN THE U.S. COTTON CROP OF 1967. *Plant Dis. Rep.* 52(9):671-674. Sept. 1968. 1.9 P69P

Ultraviolet light used for detection. Examination of a series of 2250 cotton fiber samples from the U.S. crop of 1967 to detect *Aspergillus flavus*-associated fluorescing spots has revealed very few or no samples with such spots from most locations, but significant numbers from certain parts of California, Arizona, and Texas. This geographical distribution in the 1967 crop was very similar to the distribution observed in earlier surveys on the crops of 1957 and 1966.

225 Gracia, O., and others. SOME VIRUSES AFFECTING TOMATOES AND PEPPERS IN ARGENTINA. *Plant Dis. Rep.* 52(9):674-676. Sept. 1968. 1.9 P69P

J. M. Feldman, R. E. Pontis, and J. Boninsegna, joint authors.

A survey of mechanically transmitted viruses from tomato and pepper crops was carried out in the province of Mendoza, Argentina. Alfalfa mosaic virus on pepper and tomato bushy stunt virus on tomato are reported for the first time in Argentina, and potato virus Y on tomato and pepper, and cucumber mosaic virus on tomato for the first in Mendoza. Tobacco mosaic and tomato spotted wilt are common viruses frequently found on both crops; they appear to be endemic and widely spread in this province. Potato virus X was detected only on tomato. Other viruses not yet identified are under study.

Identifications were based primarily on host range and serological reactions.

(Continued in next column)



- 226 Pontis, R. E., Gracia, O., and Feldman, J. M. TOMATO BUSHY STUNT VIRUS ON TOMATO CROPS IN ARGENTINA. *Plant Dis. Rep.* 52(9):676-677. Sept. 1968. 1.9 P69P  
Tomato bushy stunt virus was isolated from tomato crops for the first time in Argentina. Identification was based on host range, in vitro properties, serological reactions, and electron micrographs.
- 227 Cole, H., and Anderson, P. M. CARBON DIOXIDE-POWERED PLOT SPRAYER FOR TURFGRASS DISEASE CONTROL FUNGICIDE APPLICATION. *Plant Dis. Rep.* 52(9):678-682. Sept. 1968. 1.9 P69P  
A sprayer was designed and constructed for application of experimental fungicides at varying dosage, volume, pressure and plot size to turfgrass areas. It was constructed of aluminum, brass, and stainless steel, on two bicycle wheels with a trailing caster wheel for control of boom height. Hydraulic pressure for spraying is produced by a CO<sub>2</sub> cylinder mounted on the unit. Four different boom widths were provided for spraying plots from 2 to 6 feet in width. It was designed to be manually propelled by one person with rate of travel shown by a speedometer calibrated to 0.1 mph. Spray output could be varied from 0.4 to 10 gallons per 1000 sq. ft. by selection of proper pressure, nozzle tip orifice, and boom nozzle spacing. Pressures were adjustable from 1 to 100 psi. The spray booms were easily adjustable for boom height and angle of spray contact. Very precise spray volume outputs and spray patterns could be maintained from plot to plot after initial calibration.
- 228 Morton, D. J., Fieldhouse, D. J., and Kim, S. H. EFFECTS OF BACTERICIDES, SACCHARIN, AND ALAR ON PEPPER YIELD AND BACTERIAL SPOT IN DELAWARE, 1967. *Plant Dis. Rep.* 52(9):683-685. Sept. 1968. 1.9 P69P  
*Xanthomonas vesicatoria*.  
Fixed copper (cupric hydroxide) containing 56 metallic Cu (Kocide 101) (K 101) at 2 lb/acre was the only treatment tested which significantly (5% level) increased the weight and number of marketable peppers; tribasic copper sulfate at 4 lb/acre significantly increased the weight but not the number. K 101 at 1 lb/acre and the addition of oil at 2 lb/acre gave insignificant results.  
Saccharin was applied to the soil and the foliage at different rates and was tested in combination with Alar; none of these treatments significantly affected yields.  
Bacterial spot incidence was fairly heavy but varied markedly within plots. No significant differences were calculated among treatments for bacterial spot control on either foliage or peppers.
- 229 Morton, D. J., and Kim, S. H. YIELD INCREASES AND ANTHRACNOSE AND EARLY BLIGHT REDUCTIONS ASSOCIATED WITH TOMATO FUNGICIDE TESTS IN DELAWARE, 1967. *Plant Dis. Rep.* 52(9):685-687. Sept. 1968. 1.9 P69P  
Caused by *Colletotrichum phomoides* and *Alternaria solani*, respectively.  
Fungicide treatments were compared at Newark and Georgetown, Delaware. N-(1,1,2,2-tetrachloroethyl)sulfonyl-cis-4-cyclohexene-1,2-dicarboximide (Difolatan) (Dfn.) 80W (3 lb/acre), Dfn. 4F (6 lb/acre), tetrachlorophthalonitrile (Daconil) (DAC 2787) (2 lb and 3 lb/acre), and 80% maneb and 20% inert including zinc (Dithane M-22 Special) (maneb + zinc) (3 lb/acre) significantly reduced anthracnose incidence at both locations and increased yield (weight) at Georgetown. With respect to yield, both Dfn. treatments were significantly more effective than either DAC 2787 at 2 lb or maneb + zinc; DAC 2787 at 3 lb was intermediate. Yield differences at Newark were not significant. The above treatments, as well as fixed copper (cupric hydroxide) containing 56% metallic Cu (Kocide 101), significantly reduced foliar early blight incidence at Georgetown.
- 230 Kaiser, W. J., and others. DISEASES OF PULSE CROPS (EDIBLE LEGUMES) IN IRAN. *Plant Dis. Rep.* 52(9):687-691, map. Sept. 1968. 1.9 P69P  
D. Danesh, M. Okhovat, and H. Mossahebi, joint authors.  
Diseases are a constant threat and often a limiting factor in the cultivation of pulse crops in Iran. In the drier areas diseases caused by viruses and root rot fungi were seen most frequently and were of greatest economic importance, while foliar diseases were usually confined to the wetter regions of the country. The diseases of beans, broadbeans, chickpeas, cowpeas, lentils, mungbeans, and peas that occur in Iran are listed and some observations on their importance and distribution within the country are made.
- 231 Slattery, R. J. CONTROL STUDIES ON GYM-NOSPORANGIUM JUNIPERI-VIRGINIANAE ON JUNIPERS [JUNIPERUS SCOPULORUM AND J. VIRGINIANA]. *Plant Dis. Rep.* 52(9):692-695. Sept. 1968. 1.9 P69P  
Cycloheximide, N-(phenylmercurio)ethylene-diamine (Coromerc) (Cor.) and 2,3-dihydro-5-carboxanilido-6-methyl-1,4-oxathiazin-4,4-dioxide (Plantvax) (DCMOD) caused internal and external necrosis of young galls of *Gymnosporangium juniperi-virginianae*. They also reduced the number of galls that formed telia and the germinability of the teliospores. The effectiveness of each fungicide was increased by the addition of dimethyl sulfoxide. Cycloheximide and DCMOD were more effective than Cor. in reducing the number of galls with telia and germinability of the teliospores. Cycloheximide, however, caused conspicuous phytotoxicity when applied in June.
- 232 Chandler, W. A. PREHARVEST FUNGICIDES FOR PEACH BROWN ROT CONTROL. *Plant Dis. Rep.* 52(9):695-697. Sept. 1968. 1.9 P69P  
*Monilia fructicola*.  
In field fungicide test extending over 6 years, three preharvest applications of certain organic fungicides and fungicidal mixtures following wettable sulfur have generally provided better postharvest brown rot control than a full schedule of sulfur.  
In a single test, three preharvest applications of a new fungicide, 1-(butylcarbamoyl)-2-benzimidazole carbamic acid, methyl ester, resulted in outstanding brown rot control.
- 233 Zwet, T. van der. RECENT SPREAD AND PRESENT DISTRIBUTION OF FIRE BLIGHT IN THE WORLD. *Plant Dis. Rep.* 52(9):698-702, map. Ref. Sept. 1968. 1.9 P69P  
Fire blight (*Erwinia amylovora*) of pear, apple, and other rosaceous hosts is believed to be indigenous to the United States. Between 1780 and 1890 it spread from New York to California. During the early 1900's the disease was observed in Canada, Japan, New Zealand, and Mexico. Since 1957, fire blight has been recorded in England, Chile, Egypt, Poland, The Netherlands, and Guatemala. All other reports outside these 11 countries are unconfirmed observations of blossom blight or pear blast caused by *Pseudomonas syringae*.
- 234 Nome, S. F., and Docampo, D. AN ADDITIONAL LIST OF PLANT PATHOGENS NOT PREVIOUSLY REPORTED IN CHILE. *Plant Dis. Rep.* 52(9):703-704. Sept. 1968. 1.9 P69P  
Vegetables; includes soybeans.
- 235 Anzalone, L. VIRUS INOCULUM CONCENTRATION IN RELATION TO SCREENING SUGARCANE SEEDLINGS FOR LEVELS OF RESISTANCE TO STRAIN H OF SUGARCANE MOSAIC VIRUS. *Plant Dis. Rep.* 52(9):705-707. Sept. 1968. 1.9 P69P  
Sugarcane varieties and seedlings or sorghum seedlings were inoculated with sugarcane mosaic virus preparations from infected sorghum leaf tissue and water in ratios of 1:1, 1:3, 1:10, and 1:100. Results suggest that the 1:3 and 1:10 dilutions of the virus preparations might be more efficient in screening for acceptable levels of resistance than lower or higher dilutions.
- 236 Parmeter, J. J., and Miller, P. R. STUDIES RELATING TO THE CAUSE OF DECLINE AND DEATH OF PONDEROSA PINE [PINUS PONDEROSA] IN SOUTHERN CALIFORNIA. *Plant Dis. Rep.* 52(9):707-711. Sept. 1968. 1.9 P69P  
Fertilization of ponderosa pines failed to arrest or reverse the disease condition variously referred to as X-disease, chlorotic decline, or ozone needle mottle. Injection of trace elements did not improve needle color or retention. Healthy scions grafted onto diseased trees remained healthy. Diseased scions on healthy trees remained diseased. These observations, coupled with observations on the distribution of diseased trees in relation to site, topography, and geography, suggest that drought, nutritional deficiency, or rootlet deterioration are not primarily responsible for the disease. Prolonged exposure to aerial oxidants, mainly ozone, appears to be the primary cause.

- 237 Fordyce, C. MICROORGANISMS ASSOCIATED WITH MARKET DETERIORATION OF THE CULTIVATED MUSHROOM, *AGARICUS BISPORUS*. Plant Dis. Rep. 52(9):712-714. Ref. Sept. 1968. 1.9 P69P  
Mushrooms from five local grocery chain stores were sampled weekly for 6 weeks to determine the microflora associated with deterioration. The samples included mushrooms from 19 growers. All mushroom samples except one were from growers located in the Chester County area of Pennsylvania. Fourteen genera of fungi were isolated on agar plates. Mushrooms from 11 growers were infected with *Trichoderma koningi* Oud. and those from 7 growers were infected with *Verticillium dahliae* Ware. Deterioration of mushrooms which had been commercially treated with sodium bisulfite prior to packaging was more rapid and microorganisms were more prevalent than with untreated mushrooms.
- 238 Sinha, S. K., Mukhopadhyay, A. N., and Saxeña, S. C. BACTERIAL BLIGHT OF SUGARBEET IN INDIA. Plant Dis. Rep. 52(9):715. Sept. 1968. 1.9 P69P  
*Pseudomonas aptata*.
- 239 Cook, R. J., and others. OCCURRENCE OF TAKE-ALL IN WHEAT IN THE PACIFIC NORTHWEST. Plant Dis. Rep. 52(9):716-718, map. Sept. 1968. 1.9 P69P  
D. Huber, R. L. Powelson, and G. W. Bruehl, joint authors.  
Take-all of wheat caused by *Ophiobolus graminis* is increasing in importance in the Pacific Northwest because of increases in the acreage of irrigated wheat. Between 600,000 and 650,000 acres of wheat were irrigated in the Pacific Northwest in 1967, representing about 15% of the total wheat acreage and 30-35% of the total production. Losses caused by take-all in 1967 occurred primarily in the irrigation districts and were estimated at 4% of the total irrigated wheat in Idaho, the oldest irrigation district; 2% in Washington; and 0.5% in Oregon, where irrigated wheat culture is most recent. Total loss under irrigation for 1967 was estimated at between 1 and 2 million bushels. Wheat following wheat, together with the presence of ample water on typically light-textured soils of most irrigation districts, apparently accounts for the increase of take-all.
- 240 Joffe, A. Z., and Lisker, N. EFFECT OF SOIL FUNGICIDES ON DEVELOPMENT OF FUNGI IN SOIL AND ON KERNELS OF GROUNDNUT. Plant Dis. Rep. 52(9):718-721. Sept. 1968. 1.9 P69P  
The effects on soil mycoflora and kernel yield of soil fungicides applied to groundnuts grown in barrels inoculated with *Aspergillus flavus* were studied.  
Populations of *A. flavus* in the soil declined during the period of groundnut growth even without fungicidal treatments, but the decline was much steeper in soil treated with tetrachloroophthalonitrile or potassium sorbate, less so after pentachloronitrobenzene (PCNB) 10-4 treatment. Frequency of the dominant genera of soil fungi was not affected.  
The stage of groundnut growth at which PCNB was applied to the soil did not markedly affect the rate of *A. flavus* recovery from the soil at harvest. *A. niger* was relatively frequent, and *Fusarium solani* scarce, in kernels from soil untreated or treated with PCNB at seedling emergence, while the reverse was true where soil was treated at later stages.  
Treatments did not affect development of the groundnuts or their yield.
- 241 Ogawa, J. M., Manji, B. T., and Bose, E. EFFICACY OF FUNGICIDE 1981 IN REDUCING FRUIT ROT OF STONE FRUITS. Plant Dis. Rep. 52(9):722-726. Sept. 1968. 1.9 P69P  
Brown rot.
- 242 Simpson, W. R., and Fenwick, H. S. CHEMICAL CONTROL OF CORN HEAD SMUT. Plant Dis. Rep. 52(9):726-727. Sept. 1968. 1.9 P69P  
*Sphecotheca relliana*.
- 243 Miller, P. M., and Rich, S. REDUCING SPRING DISCHARGE OF *VENTURIA INAEQUALIS* ASCOSPORES BY COMPOSTING OVERWINTERING LEAVES. Plant Dis. Rep. 52(9):728-730. Sept. 1968. 1.9 P69P  
Nitrogenous fertilizers applied in late autumn hasten the decomposition of dropped apple leaves during the following winter. This decomposition greatly reduces the production of ascospores from leaves naturally infected with *Venturia inaequalis* (Cke.) Winter, and may reduce the number of primary infections in the spring. Autumn applications of both lime and potassium phosphate also inhibit ascospore discharge but not so effectively as nitrogenous fertilizers. None of these treatments reduces ascospore discharge when applied in the spring.
- 244 Miller, P. M., and Rich, S. OZONE DAMAGE ON APPLES. Plant Dis. Rep. 52(9):730-731. Sept. 1968. 1.9 P69P  
Exposure to high rates of ozone for 3 days produced grey to brown pitted areas around lenticels of "Cortland," "Red Rome," and "McIntosh" apples, but not on "Red Delicious" or "Golden Delicious" apples. These pits were 1 to 2 mm in diameter, with a corky area extending 1 mm into the flesh. Neither light nor relative humidity influenced occurrence of the injury.
- 245 Rich, S., and Tomlinson, H. AIR POLLUTION DAMAGE TO PETUNIAS AND DATURAS IN CONNECTICUT. Plant Dis. Rep. 52(9):732-733. Sept. 1968. 1.9 P69P
- 246 Arguelles-Rasa, E. ANATOMIC EFFECTS OF CADANG-CADANG DISEASE ON COCONUTS. Plant Dis. Rep. 52(9):734-737. Ref. Sept. 1968. 1.9 P69P
- 247 Smerlis, E. ADDITIONAL INFORMATION ON THE PATHOGENICITY OF *SCLERODERMIS LAGERBERGII*. Plant Dis. Rep. 52(9):738-739. Sept. 1968. 1.9 P69P  
*Picea* spp. and *Pinus* spp.
- 248 Miller, J. W. RACE BUILDUP OF XANTHOMONAS MALVACEARUM ON COTTON IN SOUTHEAST MISSOURI. Plant Dis. Rep. 52(9):739-740. Sept. 1968. 1.9 P69P
- 249 Thyr, B. D. BACTERIAL CANKER OF TOMATO: INOCULUM LEVEL NEEDED FOR INFECTION. Plant Dis. Rep. 52(9):741-743. Sept. 1968. 1.9 P69P  
Tomato seedlings can become infected by *Corynebacterium michiganense* (E. F. Smith) Jensen with as few as five cells and probably with only one cell of the organism when introduced directly into xylem tissue. Cells of *C. michiganense* die when held 1 week in aqueous suspension at a concentration of 10<sup>5</sup> or fewer cells/cc, but remain alive if concentrated 10<sup>6</sup> or more cells/cc, however, some cells die even in the higher concentration.
- 250 Parris, G. K. AUTOMOBILE EXHAUST FUMES CAUSE DIEBACK OF REDBUD [CERCIS CANADENSIS]. Plant Dis. Rep. 52(9):744. Sept. 1968. 1.9 P69P
- 251 U. S. Agricultural Research Serv. DHIA [DAIRY HERD IMPROVEMENT ASSOCIATIONS] COW PERFORMANCE INDEX LIST; REGISTERED PROGENY OF DHIA SIREs. U. S. Agr. Res. Serv. ARS 44-187,203 p. Mar. 1967. A49.9 R31A
- 252 U. S. D. A. Agricultural Research Service. DHIA [DAIRY HERD IMPROVEMENT ASSOCIATION] SIRE SUMMARY LIST. I. AYRSHIRE, GUERNSEY, JERSEY, BROWN SWISS, MILKING SHORTHORN, RED DANE, AND RED POLL SIREs. U. S. Agr. Res. Serv. ARS-44-192,334 p. Jan. 1968. A49.9 R31A
- 253 U. S. D. A. Agricultural Research Service. DHIA [DAIRY HERD IMPROVEMENT ASSOCIATION] SIRE SUMMARY LIST. II. HOLSTEIN SIREs. U. S. Agr. Res. Serv. ARS-44-192,402 p. Jan. 1968. A49.9 R31A
- 254 Dickinson, F. N., and others. DAIRY-HERD-IMPROVEMENT LETTER; DHIA PARTICIPATION REPORT; JANUARY 1, 1968. U. S. Agr. Res. Serv. ARS-44-201,21 p. map. Mar. 1968. A49.9 R31A  
B. T. McDaniel, C. A. Rampendahl, and J. J. Corbin, joint authors.
- 255 Peterkin, B., and Rauschert, M. FOOD USE IN FARM AND URBAN HOUSEHOLDS IN 1955 AND 1965. U. S. Agr. Res. Serv. ARS-62-5-3-5. Sept. 1968. A321.9 R31  
During the 10 years between 1955 and 1965, U. S. households changed their food consumption patterns to include more meat, poultry, and fish and more bakery products, but smaller quantities of milk, vegetables and fruit, and flour and cereals. These are findings from nationwide food consumption surveys made in spring 1955 and 1965.  
Both farm and urban households shared in these changes in food consumption. However, for every major food group except vegetables and fruit, the change in average quantity used was greater in farm than urban households.
- 256 Smythe, K. D. SPENDING FOR SERVICES. U. S. Agr. Res. Serv. ARS-62-5-14-15. Sept. 1968. A321.9 R31  
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- 259 U. S. Agricultural Research Serv. Consumer and Food Economics Research Div. FOOD CONSUMPTION OF HOUSEHOLDS IN THE UNITED STATES; SPRING, 1965. U. S. Agr. Res. Serv. Household Food Consumption Survey 1965-66, Rep. 1,213 p., map. July 1968. aTX360. U5A5  
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- 266 U. S. Agricultural Stabilization and Conservation Committee, North Carolina. Pender County. ANNUAL REPORT, 1967. Burgaw, 1968? 20 p. A281.9 St16
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The government's Standby Defense Order No. 2 is designed to guide the food industry in case of nuclear attack.
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Chiefly U. S. fruit and vegetable exports to Europe.

- 341 Dirks, H. J. EEC ESTABLISHES SINGLE MARKET FOR BEEF. Foreign Agr. 6(36):6-7. Sept. 2, 1968. A281.9 F76Fo

The European Economic Community on July 1 completed its 5-year advance toward a single market for beef. With import prices of its six members now unified, the Community becomes an even more limited market for imports of beef carcasses and cuts from third countries. But it still presents a fairly good market for livestock and meat products not covered by the import levy system.

The basic changes provided for in the market unification are as follows:

Abolition of all trade barriers among member countries—the one exception being for veterinary reasons.

Establishment of a single market, orientation, and intervention prices, plus a common-import levy against third country imports.

Special import arrangements for young fattening cattle.

New provisions for importing lower quality frozen beef destined for manufacturing purposes.

Export subsidies covering the difference between Community and world market prices.

- 342 Thadani, J. A. A LOOK AT INDIA'S OILSEEDS SITUATION. Foreign Agr. 6(36):8-9. Sept. 2, 1968. A281.9 F76Fo  
Yields and policies.

The vegetable oils situation for India has considerably improved in 1968 after a period of 4 difficult years, thanks to the large oilseeds crops harvested in 1967-68. The domestic production situation for the ensuing season also shows promise, but much still depends on weather conditions during September and October.

- 343 Kriesberg, M. FOOD PROBLEMS: SEARCH FOR SOLUTIONS TURNS TO DISTRIBUTION. Foreign Agr. 6(37):2-4. Sept. 9, 1968. A281.9 F76Fo  
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Food is now being produced in greater quantities than ever before, but the problem of getting it to those who need it still remains to be solved.

- 344 Haviland, G. L. GRAIN STORAGE; INDIA'S PRESENT DILEMMA. Foreign Agr. 6(37):5-7. Sept. 9, 1968. A281.9 F76Fo

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- 346 Payne, F. N. AGRICULTURE WIDENS ZAMBIAN ECONOMIC BASE. Foreign Agr. 6(37):8-9. Sept. 9, 1968. A281.9 F76Fo

- 347 Pitcher, S. BRAZIL BEGINS NEEDED PASTURE OVERHAUL. Foreign Agr. 6(38):2-4. Sept. 16, 1968. A281.9 F76Fo

- 348 McDonald, J. C. BRAZIL; HIGHLIGHTS ON EXPORT COMMODITIES. Foreign Agr. 6(38):4. Sept. 16, 1968. A281.9 F76Fo

- 349 Parker, J. PREVIEW; FOODGRAIN NEEDS IN PAKISTAN. Foreign Agr. 6(38):5-6. Sept. 16, 1968. A281.9 F76Fo  
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350 Hume, D. L. HEALTH-MINDED BRITONS REDUCE DAILY CALORIE INTAKE. Foreign Agr. 6(38):11. Sept.16,1968. A281.9 F76Fo

351 Tetto, R. C. ITALY'S PROSPERITY REFLECTED IN DIET. Foreign Agr. 6(38):11. Sept.16,1968. A281.9 F76Fo

352 Horsley, B. J. A SALUTE TO COOPERATIVES IN U.S. AGRICULTURAL TRADE. Foreign Agr. 6(39):2-3. Sept.23,1968. A281.9 F76Fo

Cooperatives penetrate every phase of U.S. farm trade—with functions varying from marketing of beans overseas to buying grass seed in Europe and twine in Mexico for use on farms at home. And they play an equally important role in the trade of our customers and competitors.

353 Kampe, R. E. PREVIEW; SOUTH AFRICA'S FARM TRADE. Foreign Agr. 6(39):4-6. Sept.23,1968. A281.9 F76Fo

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354 Stephanides, C. S. IRAN'S FARMERS ACHIEVING GREATER OODGRAIN OUTPUT. Foreign Agr. 6(39):8. Sept.23,1968. A281.9 F76Fo

Production of wheat, barley, rice, and pulses in Iran is estimated up for the 1968-69 season because of favorable weather (abundant spring rainfall) and increased crop acreage. Both production and area planted of major food grains has been steadily climbing in the country.

355 Clendenen, C. M. MOROCCO'S FERTILIZER PROGRAM GETS RESULTS. Foreign Agr. 6(39):9-10. Sept.23,1968. A281.9 F76Fo

Now in its second year, "Operation Engrais"—"Operation Fertilizer"—is credited with being one of the main reasons for Morocco's expected record-breaking cereal production this year. Because of increased fertilizer use sparked by this program to fertilize the maximum amount of wheat land possible plus favorable weather, a 1967-68 cereals crop of nearly 4.9 million metric tons is probable according to preliminary estimates. Last year's crop totaled 2.6 million tons.

356 Boulware, J. H. INDIA INCREASES STORED GRAIN; EYES NEXT HARVEST. Foreign Agr. 6(39):10. Sept.23,1968. A281.9 F76Fo

The 1967-68 bumper wheat crop (now estimated by the Indian Government at 16.6 million metric tons), plus record production of barley, corn, sorghum, and spiked millets, has helped Indian officials to double stocks of stored grain between the beginning of January and the end of July this year. Another aid to increasing stocks has been continued sizable imports of foodgrains—chiefly from the United States.

357 Bowser, W. C. ECUADOR SEES THREE NEW EXPORT PROSPECTS. Foreign Agr. 6(39):11-12. Sept.23,1968. A281.9 F76Fo

Growing interest in the world export market is leading Ecuador, long dependent on a few key cash-earning crops, to diversify its agricultural base. This is bringing abaca, tea, and mushrooms—three commodities seen to have export potential—to a position of new importance in Ecuador's farm industry.

358 Minneman, P. G. WEST GERMAN FARMERS OPPOSE EEC PLANS TO USE MORE SUGAR IN FEED. Foreign Agr. 6(39):13. Sept.23,1968. A281.9 F76Fo

359 Noilmeyer, J. B. USDA'S BARTER PROGRAM; HOW IT'S CHANGED, WHAT IT'S DOING. Foreign Agr. 6(40):2-4. Sept.30,1968. A281.9 F76Fo

Now in its sixth year, USDA's "new-style" barter program has strengthened the U.S. balance of payments position as a boon to commercial exports.

360 Hume, D. L. BRITAIN'S GRAIN TRADE MAINTAINS AN EVEN KEEL. Foreign Agr. 6(40):4. Sept.30,1968. A281.9 F76Fo

An increased share of the U.K. grain demand was supplied by home-grown crops in 1967-68, but total grain imports remained relatively steady. Breadgrains (except rye) and feedgrains were down about 2 percent, with the biggest reductions in barley, sorghums, and oats. Imports of feed wheat and corn rose.

361 Rowan, W. S. CHILEAN FARMERS BRACE FOR WORSENING DROUGHT. Foreign Agr. 6(40):5. Sept.30,1968. A281.9 F76Fo

Effects on plants and livestock.

362 Abel, M. E. HOW FARM EXPORTS AID AGRIBUSINESS TRADE. Foreign Agr. 6(40):7-9. Sept.30,1968. A281.9 F76Fo

Some of the U.S. Government programs used in our agricultural export operations employ considerable ingenuity not only to help expand the export movement of farm products but also to help stimulate economic development in the importing country—thereby helping to increase demand for agribusiness products.

These are, basically, financing programs. They are good tools. We have had a lot of satisfactory experience with them. We find that they are useful both to help capture a larger share of the foreign market for our agricultural products and to help expand the market for all products.

There are four of these programs:

- CCC export credit sales program;
- Private trade sales agreements;
- Loans to private enterprise (Cooley loans);
- Agricultural market development program.

363 Magleby, R. S. MEXICO'S PACIFIC NORTH; DESERT PLUS WATER EQUALS FARM PROSPERITY. Foreign Agr. 6(40):10-11. Sept.30,1968. A281.9 F76Fo

The rim of land surrounding the Gulf of California is not at first glance one of Mexico's most promising agricultural areas. The climate ranges from semiarid in the southern and mountain areas to very arid in the northern and coastal regions. But extensive irrigation projects using both surface and underground water, together with some local initiative, have made the region a major source of vegetables, fruits, wheat, and cotton for both domestic and foreign markets.

364 Dirks, H. J. WORLD PORK TRENDS. U. S. Foreign Agr. Serv. FAS-M-197,57 p. May 1968. A281.9 F76Fm

Trade, consumption, and production statistics.

365 U. S. Foreign Agricultural Serv. Program Operations Div. TITLE I, PUBLIC LAW 480: TOTAL AMOUNTS PROGRAMMED AND SHIPPED THROUGH DECEMBER 31, 1967, BY COUNTRY AND COMMODITY. U. S. Foreign Agr. Serv. SDS-2-68,63 p. May 21,1968. A286.9 F762

## FOREST SERVICE

366 Potter, D. R. NEW HERBICIDE KILLS NINEBARK [PHYSOCARPUS MALVACEUS]. U. S. Forest Serv. Res. Note INT-75,2 p. 1968. A99.9 F764Un

Picloram used in forests. Ninebark can be killed with Tordon 22K or Tordon 101 with little danger to wildlife. Two spray coverages were found equally effective: foliage only and foliage-stem-root collar. No regrowth or sprouting occurred during three growing seasons.

367 Johnson, Von J. BUILDUP INDEX [OF THE NATIONAL FIRE DANGER RATING SYSTEM] AS AN EXPRESSION OF MOISTURE CONTENT IN DUFF. U. S. Forest Serv. Res. Note NC-43,4 p. 1968. ASD11.A33

The relation between Buildup Index and moisture content of grouped litter and duff samples from beneath four medium-site forest stands closely approximated the relation between Buildup Index and moisture equivalent of 5-day timelag fuels having an equilibrium moisture content of 15 percent.

368 Arola, R. A. A DUAL-RANGE STRAIN GAGE WEIGHING TRANSDUCER EMPLOYING AUTOMATIC SWITCHING. U. S. Forest Serv. Res. Note NC-44, 4 p. 1968. ASD11.A33

Describes a dual range strain gage transducer which has proven to be an excellent weight-sensing device for weighing trees and tree-length logs; discusses basic principles of the design and operation; and shows that a single transducer having two sensitivity ranges with automatic internal switching can sense weight with good repeatability and that one calibration curve serves the entire ambient temperature range in which it is used.

- 369 Bare, B. B. A COMPUTER PROGRAM FOR DISPLAYING FOREST SURVEY TYPE INFORMATION. U. S. Forest Serv. Res. Note NC-45,4 p. 1968, aSD11.A33

Presents a computerized procedure for displaying forest type information from inventory plots. Although the development of general forest type maps is emphasized, the program can be used to display any locational data having rectangular coordinates.

- 370 Cooper, G. A. USE HARDWOODS FOR BUILDING COMPONENTS. U. S. Forest Serv. Res. Note NC-46,4 p. 1968, aSD11.A33

Describes a system for prefabricating structural units from hardwoods for use in roofs, floors, and walls of A-frame or post-and-beam type construction. The interior face of the unit is decorative paneling; the exterior face is sheathing. Use of the system could reduce prefabricated house construction costs compared to conventional construction costs.

- 371 Tubbs, C. H. THE INFLUENCE OF RESIDUAL STAND DENSITIES ON REGENERATION IN SUGAR MAPLE STANDS. U. S. Forest Serv. Res. Note NC-47,4 p. 1968, aSD11.A33

Lake States.  
Studies of regeneration 2, 5, and 10 years after cutting mature and overmature sugar maple stands to several residual densities show that (1) sugar maple is still the predominant species under all stand densities (2) nearly all regeneration reaching larger size classes became established before cutting (3) heavier cuttings (30, 50, and 70 square feet) are more rapidly making up deficits in sapling and pole sized classes than the lightest cutting (90 square feet).

- 372 Gysel, L. W. DEER BROWSE PRODUCTION OF OAK STANDS IN CENTRAL LOWER MICHIGAN. U. S. Forest Serv. Res. Note NC-48,4 p. 1968, aSD11.A33

Forest management.  
The extensive oak forests of Lower Michigan provide essential habitat for white-tailed deer and other wildlife. Clearcutting these stands results in high browse production (500-1000 lbs./acre) compared to uncut stands is under 18 inches tall, whereas most of that in open stands is above snowline and thus available in winter.

- 373 Benzie, J. W. REGENERATION OF CUTOVER JACK PINE STANDS. U. S. Forest Serv. Res. Note NC-49,4 p. 1968, aSD11.A33

Jack pine can be regenerated on mineral soil seedbeds by scattering cone-bearing branches or repellent-treated seed. On some areas where competition develops, the seedlings may need to be released between the third and fifth years.

- 374 Chase, C. D. MICHIGAN'S TIMBER VOLUME. U. S. Forest Serv. Res. Note NC-50,4 p. 1968, aSD11.A33

Michigan's timber volumes increased about two-fifths since 1955 reaching 15.0 billion cubic feet of growing stock including 33.7 billion board feet of sawtimber-size material in 1966.

- 375 Little, S. RESULTS OF HERBICIDE TRIALS TO CONTROL JAPANESE HONEYSUCKLE [LONICERA JAPONICA]. U. S. Forest Serv. Res. Note NE-62,8 p. 1967, A99.9 F762U

Three or more annual sprays are required to eliminate Japanese honeysuckle where 2,4-D, a mixture of 2,4-D and 2,4,5-T, or amitrole is applied as either a low-volume (mistblower) or high-volume spray. Dicamba and picloram are more effective. The mixture of 2,4-D and picloram is recommended as the best material for eliminating honeysuckle in a single treatment at the time of harvesting overstory trees. However, 3 gallons of the material, costing about \$33, are required per acre.

- 376 McCauley, O. D. THE VALUE ADDED BY SAWMILLING IN THE APPALACHIAN HILL COUNTRY OF OHIO AND KENTUCKY. U. S. Forest Serv. Res. Note NE-67,4 p.m.p. 1967, A99.9 F762U

The difference between log costs and lumber values at 40 sawmills in the Appalachian hill country of Ohio and Kentucky provides an estimate of the value added by sawmill production. Based on these estimates, sawmilling contributed about \$12.8 million to the region's economy in 1962.

- 377 Sassaman, R. W. A COMPUTER PROGRAM FOR CALCULATING ALLOWABLE CUT USING AREA REGULATION AND A COMPARISON WITH THE ARVOL METHOD. U. S. Forest Serv. Res. Note PNW-63, 7 p. Sept. 1967, A99.9 F762U

- 378 Li, C. Y. EFFECT OF pH AND TEMPERATURE ON GROWTH OF PORIA WEIRII IN VITRO. U. S. Forest Serv. Res. Note PNW-66,6 p. Oct. 1967, A99.9 F762U

- 379 Adams, T. C. PRICE TRENDS OF OPEN-MARKET DOUGLAS-FIR LOGS IN WESTERN WASHINGTON AND NORTHWEST OREGON. U. S. Forest Serv. Res. Note PNW-74,6 p. Jan. 1968, A99.9 F762U

- 380 Harris, A. S. SMALL MAMMALS AND NATURAL REFORESTATION IN SOUTHEAST ALASKA. U. S. Forest Serv. Res. Note PNW-75,7 p. Feb. 1968, A99.9 F762U

Biannual (May or June and September), small-mammal censuses were made for 9 years on a cutover and a timbered plot in Maybeso Creek valley near Hollis, Prince of Wales Island, Alaska. *Peromyscus*, *Microtus*, and *Sorex* were captured on both plots. Over the study period, *Peromyscus* were six times more plentiful in the timber, whereas *Microtus* were six times and *Sorex* twice as numerous on the cutting. The greatest number of animals were caught in the spring of 1958, the fewest in the spring of 1963. Adequate natural regeneration of approximately 550 sitka spruce and western hemlock seedlings per acre became established on the cutover plot despite the presence of small mammals.

- 381 Barrett, J. W. RESPONSE OF PONDEROSA PINE POLE STANDS TO THINNING. U. S. Forest Serv. Res. Note PNW-77,11 p. Apr. 1968, A99.9 F762U

Thinning dense ponderosa pine pole stands on site V in northern Washington will promote greater diameter growth per tree and greater wood production on trees that will reach usable size. Trees spaced 13.2, 18.7, and 26.4 feet apart grew in diameter at the rate of 2.0, 2.6, and 3.2 inches per decade, respectively. Comparable trees in the unthinned plots grew only 0.63, 0.68, and 0.73 inches per decade. Height increment did not differ between spacings for trees of comparable initial diameters. The closest spacing produced about 31 cubic feet per acre per year compared to 19 cubic feet at the widest spacing.

- 382 Storey, T. G. AIR TANKERS IN SOUTHERN CALIFORNIA FIRES; EFFECTIVENESS IN DELIVERING RETARDANTS RATED. U. S. Forest Serv. Res. Note PSW-155,4 p. 1967, A99.9 F762

Eleven air attack experts were asked to rate 12 models of fixed-wing tankers and light helitankers for effectiveness in delivering chemical fire retardants under 21 typical situations. They rated fixed-wing tankers as more effective in strong wind crosswinds, and downwind approaches, but helitankers as more effective in narrow canyons and on steep slopes. Certain models were considered better performing than others in specific situations. The study provides the dispatcher with some guidelines on the type and model of aircraft to send out in given situations.

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Stem moisture content of ponderosa pine trees in the Black Hills fluctuated enough from season to season to account for a significant portion of the variability that might be experienced in weight scaling. A difference in moisture content of trees on different growing sites was also noted. Weight loss from logs left in woods storage for up to 108 days was not great and could largely be ignored in weight scaling. Lumber degrade during storage would probably be a more serious problem, and normally would be the main concern in log storage.

- 384 Amman, G. D. SYMPTOMS OF INFESTATION BY THE BALSAM WOOLLY APHID [ADELGES PICEAE] DISPLAYED BY FRASER FIR [ABIES FRASER] AND BRACED BALSAM FIR [A. BALSAMEA PHANEROLEPIS]. U. S. Forest Serv. Res. Note SE-85,7 p. Sept. 1967, A99.9 F762U

Stands of braced balsam fir in Shenandoah National Park in Virginia and Fraser fir near Mt. Mitchell in North Carolina were examined to determine differences in symptoms displayed by the two species to infestation by the balsam woolly aphid. The principal injury to braced balsam fir was gouting of nodes and buds. Dying of branches began at the top of the tree and proceeded toward the base. However, braced balsam fir trees survived several years of aphid infestation. Fraser fir was injured primarily from stem infestations by the aphid. Mortality of branches began at the base of the crown and proceeded to the top. Fraser fir trees died after a short period of aphid infestation.



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On 36 white oak plots on the Cumberland Plateau south of the Tennessee River, site quality was related to slope position and total length of slope. On 22 mixed red oak plots, site quality was related to aspect and slope position. No soil factors were significantly related to tree height after the effects of age and topography were taken into account.
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Includes n. spp. in Odontacarus, Polyopadum, Pseudoschoengastia, Euschoengastia, and Trombicula.
- 4479 Cooney, J. C. THE IXODIDAE (ACARINA) OF ALABAMA AND BIONOMICS OF AMBYLOMA TUBERCULATUM MARX. Diss. Abstr., Sect. B, 28(10):4165B. Apr. 1968. Z5055.U49D53
- 4480 Denis, J. ELEMENTS OF THE SPIDER FAUNA OF VENDEE. (Fr) Soc. Sci. Bretagne Bull. (Sci. Math. Phys. Natur.) 41(3/4):189-190. Sept. 30, 1967. 505 R292
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- 4487 Lawson, J. E. SYSTEMATIC STUDIES OF SOME PSEUDOSCORPIONS (ARACHNIDA: PSEUDOSCORPIONIDA) FROM THE SOUTHEASTERN UNITED STATES. Diss. Abstr., Sect. B, 28(10):4351B. Apr. 1968. Z5055.U49D53  
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- 4493 Robson, J., Robb, J. M., and Hawa, N. J. TICKS (IXODIDAE) OF DOMESTIC ANIMALS IN IRAQ. 3-4. J. Med. Entomol. 5(2):257-264, map. June 1968. 421 J828
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Asellus incurvus, A. circulus, and A. scyphus.
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- 4502** Upham, R. W., and Nachtramp, M. THREE NEW SPECIES OF TROMBICULID MITES FROM MALAYSIA WITH A REDESCRIPTION AND NOTES ON LEPTOTROMBIDIUM MURIDIA (WOMERSLEY) (ACARINA, TROMBICULIDAE). J. Med. Entomol. 5(2): 195-203. June 1968. 421 J828  
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- 4503** Vachon, M. THE GREAT SCORPION OF SENEGAL, PANDINUS GAMBIENSIS POCOCC 1899, SHOULD BE CONSIDERED AS A TRUE SPECIES AND NOT AS A SUBSPECIES OF PANDINUS IMPERATOR C. L. KOCH 1842. (Fr) Inst. Fondamental Afr. Noire Bull., Ser. A, Sci. Natur. 29(4):1534-1537. Oct. 1967. 515 D14
- 4504** Voracek, Z. A DANGEROUS PEST OF BLACK CURRANTS. (Cz) Zliva 15(4):134. July 1967. 409.6 Z6  
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- 4505** Wilson, N. RECORDS OF NASAL MITES (MESOSTIGMATA: RHINONYSSIDAE) FROM NEW GUINEA, PHILIPPINES AND UNITED STATES. J. Med. Entomol. 5(2):211-223. June 1968. 421 J828
- 4506** Woolley, T. A. A NEW SPECIES OF XYLOBATES FROM MICHIGAN (ACARI: CRYPTO-STIGMATA). Kans. Entomol. Soc. J. 41(2):261-266, map. Apr. 1968. 420 K13  
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Tetrastichus ovulorum and Pediobius foveola-
- 4510** Balsbauch, E. U., and Kirk, V. M. DISTRIBUTIONAL AND ECOLOGICAL NOTES ON DISTIGMOTERA AND PSEUDOLAMPIS WITH A DESCRIPTION OF A NEW SPECIES OF DISTIGMOTERA [D. FOVEOLATA] (COLEOPTERA: CHRYSOMELIDAE). Kans. Entomol. Soc. J. 41(2):243-247. Apr. 1968. 420 K13
- 4511** Basilewsky, P. CONTRIBUTION TO THE FAUNA OF THE COLOMBIA (BRAZIL). LXIV. MIS- SION A. VILLIERS AND A. DESCARPENTRIES. LXIV. COLEOPTERA, CARABIDAE. (Fr) Inst. Fondamental Afr. Noire Bull., Ser. A, Sci. Natur. 29(4):1732-1762. Oct. 1967. 515 D14  
Includes n. spp. in Liagonidium, Neosiopeles, Stenolophidius, and Lebia.
- 4512** Bertrand, H. LARVAE OF AQUATIC COLEOPTERA COLLECTED IN BRAZIL BY M. G. MARLIER. (Fr) Soc. Entomol. France. Bull. 73(1/2):3-21. Ref. Jan./Feb. 1968. 420 F84B
- 4513** Breuning, S., and Villiers, A. THE CERAMBYCIDAE OF MADAGASCAR: REVISION OF THE CERAMBYCINAE GLAUCYTINI. (Fr) Soc. Entomol. France. Ann. (n.s.) 4(1):45-67. 1968. 420 F84  
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- 4514** Cleu, H. DEVELOPMENTAL VARIATIONS IN THE CARABIDS OF THE MEGODONTUS VIOLEACEUS L. GROUP FROM THE EASTERN PART OF CENTRAL AND SOUTHERN EUROPE. (Fr) Soc. Entomol. France. Bull. 73(1/2):22-30. Ref. Jan./Feb. 1968. 420 F84B  
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- 4515** Cranham, J. E., Kanapathipillai, P., and Kathiravetpillai, A. SHOT-HOLE BORER (XYLEBORUS FORNICATUS EICH.) OF TEA IN CEYLON. II. Bull. Entomol. Res. 57(4):619-641. Ref. June 1968. 421 B87
- 4516** Dubrovina, M. I. DESCRIPTION OF LARVAE AND PUPAE OF HYMENALIA RUFIPES F. (COLEOPTERA, ALLECULIDAE). (Rus) Zool. Zh. 47(5): 773-776. May 1968. 410 R92  
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- 4517** Endrodi, S. ADDITIONS TO THE KNOWLEDGE OF THE CYCLOCEPHALINI (COL. DYNASTINAE). (Ge) Munich Mus. G. Frey Entomol. Arb. 18: 406-411. July 1, 1967. 420 M923  
Includes n. spp. in Augoderia and Ancognatha.
- 4518** Freude, H. REVISION OF THE EPITRAGINI (COLEOPTERA, TENEBRIONIDAE). (Ge) Munich Mus. G. Frey Entomol. Arb. 18:137-307. July 1, 1967. 420 M923  
Includes Epitragus (Similepitragus) n. sgen., Cyrtomius (Grobicyrtomius) n. sgen., and n. spp. in Epitragus, E. (Gobetius) n. sgen., Hemasodes, Kaszabus n. g., Omophres, and Cyrtomius.
- 4519** Frey, G. THE GENUS PLECTRIS (PHILOCHLAENIA) (COLEOPTERA - MELOLONTHINAE); KEYS AND DESCRIPTION OF NEW SPECIES. (Ge) Munich Mus. G. Frey Entomol. Arb. 18:1-136. July 1, 1967. 420 M923
- 4520** Frey, G. NEW MELOLONTHIDAE (COL.). (Ge) Munich Mus. G. Frey Entomol. Arb. 18: 419-424. July 1, 1967. 420 M923  
New spp. in Liogenys, Isonychus and Barybas.
- 4521** Frey, G. NEW RUTELIDAE FROM THE G. FREY MUSEUM (COL.). (Ge) Munich Mus. G. Frey Entomol. Arb. 18:374-383. July 1, 1967. 420 M923  
New spp. in Pelidnota, Platycollia, Adoretus, and Chaetoderus.
- 4522** Frey, G. TWO NEW AFRICAN COPROPHAGES AND A NEW SYNONYMY (COL. SCARAB.). (Ge) Munich Mus. G. Frey Entomol. Arb. 18:404-405. July 1, 1967. 420 M923  
Bolbocerans pygmaeus n. sp., Garetta zumpti n. sp., and Phaneus schneblei Frey = Phaneus haroldi Kirsch.
- 4523** Gauss, R. A NEW CONIFER WOOD BARK BEETLE IN GERMANY, GNATHOTRICHUS MATERIARIUS FITCH. (Ge) Z. Angew. Entomol. 61(4): 454-457. May 1968. 421 Z36
- 4524** Gundersen, R. W. TAXONOMIC REVISION OF THE GENUS ENOCHRUS, SUBGENERA ENOCHRUS AND METHYDRUS FOR THE NEARCTIC REGION (HYDROPHILIDAE: COLEOPTERA). Diss. Abstr., Sect. B, 28(12, pt. 1):5064B. June 1968. Z5055.U49D53
- 4525** Herman, L. H. A GENERIC REVISION OF THE OXYTELINAE OF THE WORLD (COLEOPTERA: STAPHYLINIDAE). Diss. Abstr., Sect. B, 28(12, pt. 1):5064B. June 1968. Z5055.U49D53
- 4526** Herve, P. RESEARCHES ON THE SOIL FAUNA OF THE MONTS DE MAURES (VAR): THE ENTOMOCULIA OF THE SUBGENUS STENOTYPHILUS (COL. STAPHYLINIDAE). (Fr) Soc. Entomol. France. Ann. (n.s.) 4(1):197-206. 1968. 420 F84  
English summary.  
Includes Entomoculia malierensis n. sp.
- 4527** Hoffmann, A. CONTRIBUTION TO THE FAUNA OF IRAN. 6. COLEOPTERA: CURCULIONIDAE AND BRUCHIDAE. (Fr) Soc. Entomol. France. Ann. (n.s.) 4(1):145-154. 1968. 420 F84  
English summary.  
Includes Neocaris descampsi n. g., n. sp.
- 4528** Howden, H. F. A REVIEW OF THE TRICHIINAE OF NORTH AND CENTRAL AMERICA (COLEOPTERA: SCARABAEIDAE). Ottawa, 1968. 77 p., map. Ref. (Entomological Society of Canada. Memoirs, no. 54) 420 F84  
Includes Peltotrichus n. g., and n. spp. in Apeltastes n. g. and Trigonopeltastes.
- 4529** Jarrige, J. A NEW STAPHYLINIDAE FROM THE ISLAND EUROPA (COL.). (Fr) Soc. Entomol. France. Bull. 73(1/2):37-38. Jan./Feb. 1968. 420 F84B  
Cryptobium brunhesi n. sp.

- 4530** Kissinger, D. G. CURCULIONIDAE SUBFAMILY APIONINAE OF NORTH AND CENTRAL AMERICA. WITH REVIEWS OF THE WORLD GENERA OF APIONINAE AND WORLD SUBGENERA OF APION HERBST (COLEOPTERA). South Lancaster, Mass., Taxonomic Publications, 1968. 559 p., map. Q1596.C9K5 Bibliography: p.264-269. Includes *Neocyba* n. g., *Circapion* n. g., *Chilapion* n. g., *Chrysapion* n. g., *Apion* (Fallapion) n. gen., and n. spp. in *Apion*.
- 4531** Kistner, D. H. REVISION OF THE MYRMECOPHILUS SPECIES OF THE TRIBE MYRMEDONINI. II. THE GENERA AENICTONIA AND ANOMATOPHARA—THEIR RELATIONSHIP AND BEHAVIOR. Entomol. Soc. Amer. Ann. 61(4):971-986. Ref. July 1968. 420 En82 Includes *Aenictonia carinata* n. sp.
- 4532** Koch, C. NOTES ON SOME NEW SPECIES OF THE STIZOPINA GENUS SUIPUS FROM MADAGASCAR (COL. TENEBRIONIDAE). Soc. Entomol. France. Ann. (n.s.)4(1):173-183. 1968. 420 F84
- 4533** Lacroix, J. P. STUDY OF THE POPULATIONS OF LUCANUS CERVUS FROM SOUTHERN FRANCE. (Fr) Soc. Entomol. France. Ann. (n.s.)4(1):233-243. 1968. 420 F84
- 4534** Lanier, G. N. BIOSYSTEMATIC, CYTOLOGICAL AND SEX RATIO STUDIES OF CLOSELY RELATED BARK BEETLES (COLEOPTERA: SCOLYTIDAE). Diss. Abstr., Sect. B, 28(10):4167B. Apr. 1968. Z5055.U49D53
- 4535** Lomholdt, O. RECAPTURE OF HALIPIDAE LAMINATUS SCHALL. (COL., HALIPIDAE) IN DENMARK. (Da) Entomol. Medd. 36(2):168. 1968. 421 En82 English summary.
- 4536** Lopatin, I. NEW CHRYSOMELIDAE SPECIES FROM PAKISTAN (COL. CHRYSOMELIDAE) (Ge) Munich Mus. G. Frey Entomol. Arb. 18:323-326. July 1, 1967. 420 M923 Includes *Antipa piffii* n. sp., *Oreomela meridionalis* n. sp., and *Chrysomela coerulans piffii* n. spp.
- 4537** Mandl, K. NEW CINCINDELIDAE FORMS IN THE MUSEUM COLLECTIONS OF G. FREY TUTZING (COL.) (Ge) Munich Mus. G. Frey Entomol. Arb. 18:384-387. July 1, 1967. 420 M923 Includes *Cicindela minutissima* n. sp.
- 4538** Mandl, K. SECOND CONTRIBUTION TO THE KNOWLEDGE OF THE CINCINDELIDAE FAUNA OF PERU (COL.). (Ge) Munich Mus. G. Frey Entomol. Arb. 18:432-439. July 1, 1967. 420 M923
- 4539** Martinez, A. THE GENUS ATILIA ERICHSON (COL. SCARABAEIDAE, SERICINAE). (Sp) Munich Mus. G. Frey Entomol. Arb. 18:327-373, map. Ref. July 1, 1967. 420 M923 Chiefly redescriptions of Neotropical species.
- 4540** McCorkle, D. V. A REVISION OF THE SPECIES OF ELOPHORUS FABRICIUS IN AMERICA NORTH OF MEXICO. Diss. Abstr., Sect. B, 29(1):231B. July 1968. Z5055.U49D53
- 4541** Melville, R. V., and China, W. E. OPINION: 848: XYLEBORUS BOWDICH, 1825 (INSECTA, COLEOPTERA): SUPPRESSED UNDER THE PLENARY POWERS. Bull. Zool. Nomencl. 25(1):18-19. May 24, 1968. 410 B874
- 4542** Moore, B. P. NEW OR LITTLE KNOWN AUSTRALIAN CARABIDAE IN THE FREY MUSEUM (COL.). Munich Mus. G. Frey Entomol. Arb. 18:308-322. July 1, 1967. 420 M923 Includes n. spp. in *Phorticossus*, *Lecanomerus*, *Demetrida*, *Anomotarus*, and *Nototarus*.
- 4543** Munson, R. E., and Enns, W. R. MISSOURI DISTRIBUTION OF SPECIES OF HYPERA (COLEOPTERA: CURCULIONIDAE). Kans. Entomol. Soc. J. 41(2):266-270. Apr. 1968. 420 K13
- 4544** O'Brien, C. W. A TAXONOMIC REVISION OF THE GENUS DORYTOMUS IN NORTH AMERICA (CURCULIONIDAE: COLEOPTERA). Diss. Abstr., Sect. B, 28(7):2888B. Jan. 1968. Z5055.U49D53 Includes n. spp.
- 4545** Paulian, R. ON SOME INDO-MELANESIAN ACANTHOCERIDAE (COL. SCARABAEIDAE). (Fr) Entomol. Medd. 36(2):212-214. 1968. 421 En82 Includes n. spp. in *Pterorhochaetes*.
- 4546** Petrovitz, R. NEW ACANTHOCERINAE, HYBOSORINAE, AND OCHODAEINAE (SCARAB. COL.). (Ge) Munich Mus. G. Frey Entomol. Arb. 18:425-431. July 1, 1967. 420 M923 New spp. in *Pterorhochaetes*, *Aracotanypus*, and *Ochodaeus*.
- 4547** Petrovitz, R. NEW AND MISIDENTIFIED APHODIINAE FROM ALL PARTS OF THE WORLD (COL. SCARAB.) V. (Ge) Munich Mus. G. Frey Entomol. Arb. 18:388-403. July 1, 1967. 420 M923 Includes n. spp. in *Aphodius*, *Coptochirus*, *Boucardius* n. g., *Trichiorhysseus* and *Rhyssesus*.
- 4548** Puthz, V. CONTRIBUTION TO THE FAUNISTICS OF COLEOPTERA AND HETEROPTERA OF EASTERN AUSTRIA WITH THE HELP OF VARIOUS SPECIALISTS. (Ge) Entomol. Nachrichtenbl. 14(5):45-56. May 1967. Q1461.E55
- 4549** Stibick, J. N. L. A REVISION OF THE SUBFAMILY HYPODINIDAE OF THE WORLD (COLEOPTERA, ELATERIDAE). Diss. Abstr., Sect. B, 28(7):2890B. Jan. 1968. Z5055.U49D53 Includes n. spp. in *Berninelsonius* n. g., *Mari-kerrius* n. g., *Margajostius* n. g., *Marganelsonius* n. g., *Islandjostius* n. g., *Zealandelsonius* n. g., and *Leestibickius* n. g.
- 4550** Straneo, G. N. CONSIDERATIONS ON THE GENUS MARSYAS (COL. CARABIDAE) AND PRELIMINARY DESCRIPTIONS OF NEW SPECIES. (It) Soc. Entomol. France. Ann. (n.s.)4(1):213-225. 1968. 420 F84 French summary.
- 4551** Tanasijevic, N. A NEW CONTRIBUTION TO THE STUDY OF APION FAUNA (COLEOPTERA: CURCULIONIDAE). (Se) Zastita Bilja 96/87:301-310. Ref. 1967. 464.8 Z1 English summary.
- 4552** Wooldridge, D. P. THE AQUATIC HYDROPHILIDAE OF ILLINOIS. Ill. State Acad. Sci. Trans. 60(4):422-431. Ref. 1967. 500 IL6
- 4553** Zimmerman, E. C. OTTORHYNCHUS VERSUS BRACHYRHINUS (INSECTA, COLEOPTERA, FAMILY CURCULIONIDAE). Z. N. (S.) 1819. Bull. Zool. Nomencl. 25(1):29-35. Ref. May 24, 1968. 410 B874

# Taxonomic and Geographic Entomology Diptera

- 4554** Alexander, C. P. NEW SPECIES OF CRANE FLIES FROM TROPICAL AMERICA. IV. (DIPTERA: TIPULIDAE). Kans. Entomol. Soc. J. 41(2):209-220. Apr. 1968. 420 K13 New spp. in *Limonnia*, *Austrolimnophila*, *Shannonomyia*, *Hexatoma*, and *Teucholabis*.
- 4555** Artigas, J. N. THE ASILIDAE (DIPTERA) OF CHILE. (VOLUMES I AND II). Diss. Abstr., Sect. B, 28(12, pt.1):5060B-5061B. June 1968. Z5055.U49D53
- 4556** Bankowska, R. A NEW PARAGUS LATR. FROM CENTRAL ASIA (DIPTERA, SYRPHIDAE). Acad. Polon. Sci. Bull. Ser. Sci. Biol. 16(4):239-240. 1968. 512 W262 Paragus *stackelbergi*.
- 4557** Carpenter, S. J. REVIEW OF RECENT LITERATURE ON MOSQUITOES OF NORTH AMERICA. Calif. Vector Views 15(8):71-98. Aug. 1968. 449.8 C12
- 4558** Coulson, R. N., and Franklin, R. T. FREQUENCY OF OCCURRENCE OF CONE- AND SEED-DESTROYING INSECTS ON SHORTLEAF PINE (*Pinus echinata*) IN THE GEORGIA PIEDMONT. J. Econ. Entomol. 61(4):1026-1027. Aug. 1968. 421 J822 Chiefly Diptera and Lepidoptera.
- 4559** Crosskey, R. W. A NEW SPECIES OF MYCETOMYIELLA (DIPTERA: TACHINIDAE) PARASITIC ON OPHICRANIA LEVERI GUNTHER (PHASMIDA: PHASMATIDAE) IN THE SOLOMON ISLANDS. Bull. Entomol. Res. 57(4):525-532. June 1968. 421 B87 Mycetomyiella *phasmatophaga* n. sp.
- 4560** Disney, R. H. L. EVIDENCE THAT LUTZOMYIA DIABOLICA HALL IS CONSPECIFIC WITH L. CRUCIATA COQUILLETT (DIPTERA: PSYCHODIDAE). J. Med. Entomol. 5(2):267-268. June 1968. 421 J828

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- 4607 Razvyazkina, G. M., and Pridentseva, E. A. LEAFHOPPERS OF THE GROUPE PSAMMOTETTIX STRATUS L. (HOMOPTERA, CICADELLOIDEA) - VECTORS OF VIRUS DISEASES OF CEREALS. THEIR SYSTEMATICS AND DISTRIBUTION. (Rus) Zool. Zh. 47(5):690-696. Ref. May 1968. 410 R92  
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- 4620 McCoy, C. W. BIOSYSTEMATIC AND FIELD STUDIES OF TWO PARASITES OF THE MUSCIDI-FURAX RAPTOR COMPLEX (HYMENOPTERA: PTEROMALIDAE) WITH PARTICULAR REFERENCE TO SEX DETERMINATION. Diss. Abstr., Sect. B, 28(10): 3939B-3940B. Apr. 1968. Z5055.U49D53  
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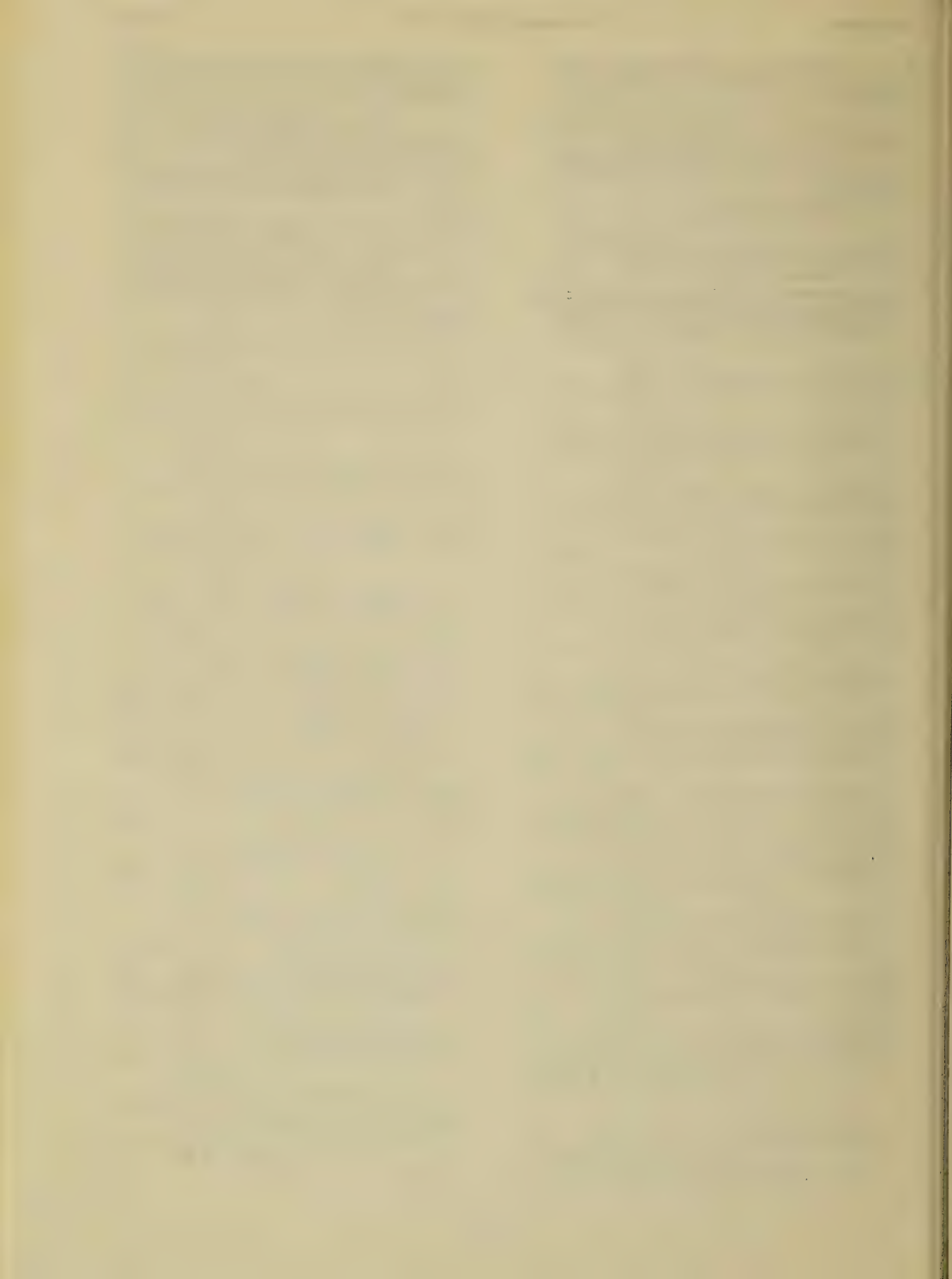
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- Steele, J. G. REPORT TO THE GOVERNMENT OF GUYANA ON SOIL SURVEYS. Rome, 1966. 248 p. (Food and Agriculture Organization of the United Nations. United Nations development program. FAO [report] no.2243) 281.9 F733E no.2243
- Toyoda, H. REPORT TO THE GOVERNMENT OF CHINA (TAIWAN) ON THE DEVELOPMENT OF SUPPLEMENTAL IRRIGATION ON SLOPE LAND. Rome, 1967. 29 p. (Food and Agriculture Organization of the United Nations. United Nations development program. FAO [report] no. 2388) 281.9 F733E no.2388
- Tucker, C. G. REPORT TO THE GOVERNMENT OF INDIA ON FREEZE DRYING TROPICAL FISHERY PRODUCTS. Rome, 1967. 31 p. (Food and Agriculture Organization of the United Nations. United Nations development program. FAO report no. 2308) 281.9 F733E no.2308
- Wagenaar, G. A. W. REPORT TO THE GOVERNMENT OF GUYANA ON THE DEVELOPMENT OF THE SETTLEMENT SCHEMES AT EBINI, BRANDWAKT-SARI, KUMAKA-KWEBANNA AND WAUNA-JARAKITA. Rome, 1966. 30 p. (Food and Agriculture Organization of the United Nations. United Nations development program. FAO [report] no. 2262) 281.9 F733E no.2262
- Bibliography, p.29-30.
- Zarkovich, S. S. QUALITY OF STATISTICAL DATA. Rome, Food and Agriculture Organization of the United Nations, 1966. 395 p. HA29.Z3
- Bibliography, p.372-388.



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Vol. 33

February 1969

No. 2

The Bibliography of Agriculture is an index to the literature of agriculture and the allied sciences received in the National Agricultural Library. Publications from any country are indexed, provided they are in one of the languages shown in CAPITALS at top of next column, or have summaries, abstracts, or translated titles in one of those languages.

Literature received more than one year after publication is generally not indexed. Exceptions are made for important scientific publications.

Indexing of articles on the processing of agricultural products is limited to those on primary processing.

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For more detailed coverage of the literature on pests and their control, please consult the Pesticides Documentation Bulletin, a biweekly publication of the National Agricultural Library.

#### FORMAT

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- USDA Publications
- State Agricultural Experiment Station Publications
- State Agricultural Extension Service Publications
- Agricultural Economics and Rural Sociology
- Agricultural Products
- Animal Industry
- Engineering
- Entomology
- Food and Human Nutrition
- Forestry
- Plant Science
- Soils and Fertilizers
- Miscellaneous

The classified section is followed by the listing of:

- New Periodicals and Serials
- Translations
- Food and Agriculture Organization of the United Nations (FAO) Publications

The last section of each monthly issue, except November, is the Author and Subject index for that issue.

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Abstracts are included with citations of U. S. D. A. publications, provided they are brief and are received with the original publication.

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Agriculture Information Bulletins

- 7939** Mannering, J. V., and Burwell, R. E. TILLAGE METHODS TO REDUCE RUNOFF AND EROSION IN THE CORN BELT. U. S. D. A. Agr. Inform. Bull. 330, 14 p. June 1968. 1 Ag84Ab  
Field crops.  
Abstract, p.1.

Farmers' Bulletins

- 7939** Peay, W. E. SUGARBEET INSECTS; HOW TO CONTROL THEM. U. S. D. A. Farmers' Bull. 2219, slightly rev., 25 p. July 1968. 1 Ag84F

Leaflets

- 7940** McIntyre, T. THE OLD HOUSE BORER [HY-LOTRUPES BAJULUS]. U. S. D. A. Leaflet 501, slightly rev., 8 p. May 1968. 1 Ag84L  
Life history and control.
- 7941** U. S. D. A. Agricultural Research Service. Entomology Research Division. PROTECTING HONEY BEES FROM PESTICIDES. U. S. D. A. Leaflet 544, slightly rev., 6 p. June 1968. 1 Ag84L

Marketing Bulletins

- 7942** U. S. D. A. Consumer and Marketing Service. Dairy Division. THE FEDERAL MILK MARKETING ORDER PROGRAM. U. S. D. A. Marketing Bull. 27, rev., 47 p. Apr. 1968. A280.39 Ag8M  
Minimum wholesale prices.

Program Aid

- 7943** U. S. D. A. Office of Information. YOUR UNITED STATES DEPARTMENT OF AGRICULTURE; HOW IT SERVES PEOPLE ON THE FARM, AND IN THE COMMUNITY, NATION, WORLD. U. S. D. A. PA-824, slightly rev., 11 p. Sept. 1968. 1 Ag84Pro
- 7944** U. S. D. A. Forest Service. TEACHING CONSERVATION THROUGH OUTDOOR EDUCATION AREAS. U. S. D. A. PA-837, 23 p. July 1968. 1 Ag84Pro
- 7945** U. S. D. A. Federal Extension Service, Division of Home Economics. WHERE TO GET CREDIT. U. S. D. A. PA-866, 4 p. Apr. 1968. 1 Ag84Pro  
Various associations extending credit.

Unnumbered Publications

- 7946** Bauer, K. W. THE ROLE OF REGIONAL PLANNING IN RESOURCE CONSERVATION. Nat. Conf. Soil, Water, Suburbia. Rep. Proc. 1967:89-97. 1968. aS912.N3  
Soil and water policies relating to land utilization in Wisconsin.  
Discussion, p.105-108.  
Summary, p.97.
- 7947** U. S. D. A. AGRICULTURAL STATISTICS, 1968. Washington, 1968. 645 p. 1 Ag84Yas
- 7948** U. S. D. A. RESOURCES IN ACTION. Washington, U. S. Government Printing Office, 1967. 19 p. aS914.A5  
Conservation.  
(Agriculture/2000).
- 7949** U. S. D. A. Animal and Animal Products Research Advisory Committee. REPORT AND RECOMMENDATIONS OF THE FIFTH MEETING: WASHINGTON, D. C., APRIL 1-5, 1968. Washington, 1968. 36 p. A49.9 R313
- 7950** U. S. D. A. Tobacco Research and Advisory Committee. REPORT AND RECOMMENDATIONS DEVELOPED AT ITS MEETING, JANUARY 11-13, 1967, WASHINGTON, D. C. Washington, 1967. 6 p. aH9136.U5

AGRICULTURAL RESEARCH SERVICE

- 7951** Adelson, S. F. CHANGES IN DIETS OF HOUSEHOLDS, 1955 TO 1965; IMPLICATIONS FOR NUTRITION EDUCATION TODAY. Nutr. Program News., May/June 1968:1-8. 1.982 AZN955
- 7952** Latham, A. J., and Amling, H. J. A NEW LEAFSPOT DISEASE OF PECAN INCITED BY CRISTULARIELLA PYRAMIDALIS IN ALABAMA AND GEORGIA. Plant Dis. Rep. 52(10):747. Oct. 1968. 1.9 P69P
- 7953** Lamberti, F. THE EFFECT OF CROPPING ON THE POPULATION LEVELS OF LONGIDORUS AFRICANUS. Plant Dis. Rep. 52(10):748-750. Oct. 1968. 1.9 P69P

In lath-house and greenhouse tests *Longidorus africanus* Merny reached the highest population levels in soils cropped 5 months with sugarbeet. Increases, with respect to the initial population levels, occurred also in soils cropped with sorghum, Bermuda grass, lettuce, eggplant, spinach, fig, tomato, grape and mint. With all the other plants tested, the initial level decreased, although the nematode maintained levels statistically higher (except alfalfa and carrot) than the fallow treatment.

A test carried out with field soil from which no larval or adult stages of the nematode could be recovered suggested that the egg is the survival stage of *L. africanus*.

- 7954** Spencer, J. A. A NEW LEAF-STREAK DISEASE OF *HEMEROCALLIS* SPP. Plant Dis. Rep. 52(10):751-753. Oct. 1968. 1.9 P69P  
Caused by *Gloecephalus hemerocalli*, n. g., n. sp.; a tentative name with no taxonomic description.  
A new leaf-streak disease of daylily (*Hemerocallis* spp.) is reported. The disease is caused by a previously undescribed fungus which produces necrotic spotting and streaking of leaves.
- 7955** Hammett, K. R. W. ROOT APPLICATION OF A SYSTEMIC FUNGICIDE FOR CONTROL OF POWDERY MILDEWS. Plant Dis. Rep. 52(10):754-755. Oct. 1968. 1.9 P69P  
Tests with vegetables, apples and wheat.  
Root application of experimental fungicide 1-(butylcarbamoyl)-2-benzimidazole carbamic acid, methyl ester resulted in eradication and prevention of powdery mildew infection of *Cucumis sativus*, *Cucurbita pepo*, *Triticum aestivum*, *Lathyrus odoratus*, and *Cyphomandra betacea*. The effect was produced at concentrations as low as 0.0017 gram of product in 400 cc of rooting medium. Phytotoxic symptoms are reported for *C. sativus* and *C. pepo* grown in concentrations of 0.1 gram of product in 400 cc of rooting medium. Protection against apple powdery mildew was not demonstrated. Several methods of application, including seed treatments, were investigated.
- 7956** Purcifull, D. E. OCCURRENCE OF A TURNIP MOSAIC VIRUS IN FLORIDA. Plant Dis. Rep. 52(10):759-760. Ref. Oct. 1968. 1.9 P69P  
A mechanically transmissible virus was isolated from a naturally infected turnip showing a leaf mosaic. The virus was a flexuous rod 755-785 nm long, was stylet-borne by aphids, and induced cytoplasmic inclusion bodies in cruciferous hosts. These properties, plus serological tests, showed that the mosaic disease was caused by turnip mosaic virus.
- 7957** Thomas, C. E., and Webb, R. E. TEXAS SPINACH VIRUSES. Plant Dis. Rep. 52(10):761-763. Oct. 1968. 1.9 P69P  
Beet curly-top virus (BCTV), spinach yellow-dwarf virus (SYDV), and tobacco ringspot virus (TRSV) were found to be the most prevalent spinach viruses in Texas during the 1966-67 season. SYDV and TRSV were the most prevalent in 1967-68. Cucumber mosaic virus (CMV) was rarely found. Total virus infection in some fields ranged to 65%. Beet curly-top was usually more prevalent in the Lower Rio Grande Valley than the Winter Garden area. SYDV, TRSV, and CMV were more prevalent in the Winter Garden area. Early spinach plantings exhibited higher rates of infection by the viruses encountered, except CMV. Smooth-leaf spinach varieties in each area were attacked more frequently by the viruses except BCTV which was found with similar frequency in both savoy- and smooth-leaf types.
- 7958** Christie, S. R., Edwardson, J. R., and Zettler, F. W. CHARACTERIZATION AND ELECTRON MICROSCOPY OF A VIRUS ISOLATED FROM BIDENS AND *LEPIDIDIUM*. Plant Dis. Rep. 52(10):763-768. Ref. Oct. 1968. 1.9 P69P  
A previously undescribed virus isolated from *Bidens pilosa* and *Lepidium virginicum* designated *Bidens mottle virus* has been shown to be mechanically transmissible to five of eight plant families tested. The virus was transmitted in the nonpersistent manner by four of the five aphid species tested. Eighty-five percent of 738 flexuous rod particles in purified preparations were 700 to 760 nm in length. Cytoplasmic inclusions in virus-infected tissues were observed with light and electron microscopy. Negatively stained extracted inclusions exhibited striations. Ultrathin sections of virus-infected plants contained cylindrical cytoplasmic inclusions. The data obtained in this study indicate that the *Bidens mottle virus* should be assigned to the PVY group.
- 7959** Miller, P. M. THE SUSCEPTIBILITY OF PARASITIC NEMATODES TO SUB-FREEZING TEMPERATURES. Plant Dis. Rep. 52(10):768-772. Ref. Oct. 1968. 1.9 P69P  
Plant parasites.  
Exposure for 24 hours to -15°C killed 99% of adults and larvae of *Pratylenchus penetrans* and 75 to 90% of adults and larvae of *Tylenchorynchus claytoni*, *Paratylenchus hamatus*, *Xiphinema americanum*, and *Rotylenchus robustus*. All of these nematodes were killed completely by a similar exposure to -43°C. Infection from cysts of *Heterodera tabacum* was about 20% less after exposure for 14 days to -15° or -27° but was prevented completely by exposure for 24 hours or longer to -43°C. Prior exposure of the cysts to -15° for 48 hours greatly reduced killing by subsequent exposure to -43°. Between 75 and 85% of *P. penetrans* did not survive 2 weeks at -4°; but the time required to kill this percentage shortened rapidly even with a slight drop in the temperature, as for example 4 hours at -9° killed twice as many *P. penetrans* as 24 hours at -4°. Adults and fourth-stage larvae were the most abundant overwintering stages of *P. penetrans*.
- 7960** Subramanian, S., and Govindarajan, T. S. A NEW ROOT ROT OF COFFEE IN INDIA. Plant Dis. Rep. 52(10):773-774. Ref. Oct. 1968. 1.9 P69P  
During an examination of diseased coffee plant material in the Central Coffee Research Institute estate, a new root rot disease of coffee was noticed. Low soil pH and high temperature were found to be predisposing factors to the disease. The causal agent was identified as *Cylindrocarpon tenue* Bugn. This is a new record.
- 7961** Anzalone, L., and Lamey, H. A. POSSIBLE DIFFERENTIAL REACTION OF CERTAIN RICE VARIETIES TO SUGARCANE MOSAIC VIRUS. Plant Dis. Rep. 52(10):775-777. Oct. 1968. 1.9 P69P  
Our test demonstrated a wide range in susceptibility of cultivated rice varieties to four strains of sugarcane mosaic virus. The varieties Berlin, British Guiana No. 79, Jajulla, No. 721 (PI 245717), and Pandhori No. 4 showed promise for differentiating strains A, B, D, and H of the virus.
- 7962** Gutter, Y. SCREENING TRIALS FOR CONTROL OF GREEN MOLD IN VALENCIA ORANGES. Plant Dis. Rep. 52(10):777-779. Oct. 1968. 1.9 P69P  
Several new antifungal compounds were tested for their effectiveness in controlling decay of Valencia oranges artificially inoculated with spores of *Penicillium digitatum*. Treatments with 5-aceto-8-hydroxyquinoline-sulfate, a formulation of sebacetyl ammonium acetate, and warm 2,6-dichloro-4-nitroaniline gave encouraging results. Didecyl-dimethyl-ammonium bromide showed only poor activity, and three other materials tested did not reduce the incidence of decay, although they exhibited marked antifungal properties in *in vitro* studies.
- 7963** Pinckard, J. A., and Guidroz, G. A PARASITIC PHYTOPHthora BOLL ROT OF COTTON FOUND IN LOUISIANA. Plant Dis. Rep. 52(10):780-781. Oct. 1968. 1.9 P69P
- 7964** Al-Beldawi, A. S., and Pinckard, J. A. 1-(BUTYL-CARBAMOIYL)-2-BENZIMIDAZOLE CARBAMIC ACID, METHYL ESTER, A SYSTEMIC FUNGICIDE EFFECTIVE AGAINST RHIZOCTONIA SOLANI ON COTTON SEEDLINGS. Plant Dis. Rep. 52(10):781-784. Oct. 1968. 1.9 P69P  
1-(Butylcarbamoyl)-2-benzimidazole carbamic acid, methyl ester (du Pont Fungicide 1991) (D-1991) showed systemic activity in cotton seedling hypocotyls against *Rhizoctonia solani* Kuehn. Seedlings growing in aqueous suspensions of D-1991 were protected for at least 15 days while their roots were immersed in concentrations of 5, 10, 20, 40, and 80 ppm, respectively. Some protection against postemergence damping-off, in containers of autoclaved field soil, occurred when seedlings were grown in soil containing 10, 20, 40, 80, and 160 ppm, respectively. Complete protection was never quite obtained. No phytotoxicity of the test chemical was noted at the concentrations used. It is suggested that D-1991 be further explored in field tests for control of *Rhizoctonia* seedling blight of cotton.

- 7965 Patil, L. K., and Moniz, L. A NEW LEAF BLIGHT DISEASE OF PAPAYA IN INDIA. *Plant Dis. Rep.* 52(10):784-785. Oct. 1968. 1.9 P69P  
A new leaf blight disease of *Carica papaya* not previously reported in the literature is described. The disease is caused by *Helminthosporium rostratum* Drechsler, and produces blight and defoliation of affected plants.
- 7966 Birchfield, W. EVALUATION OF NEMATOCIDES FOR CONTROL OF RENIFORM NEMATODES ON COTTON. *Plant Dis. Rep.* 52(10):786-789. Ref. Oct. 1968. 1.9 P69P  
Several nematocides were imposed on two varieties of cotton for control of the reniform nematode, *Rotylenchulus reniformis*, during the past 5 years. The best reniform nematode control and highest cotton yields were obtained with the following nematocides: 1,2-dibromo-3-chloropropane; 1,2-dichloropropene and 1,2-dichloropropene mixture; 1,3-dichloropropene and related C<sub>3</sub> hydrocarbons; O,O-diethyl S-[2-(ethylthio)ethyl] phosphorodithioate-PCNB mixture; 2-methyl-2-(methylthio) propionaldehyde O-(methyl-carbamoyl)oxime; O,O-diethyl O-(p-methylsulfinyl)phenyl phosphorothioate; O and ethyl S,S-dipropyl phosphorodithioate.
- 7967 Zentmyer, G. A., Mircetich, S. M., and Mitchell, D. M. TESTS FOR RESISTANCE OF CA-CAO TO PHYTOPHTHORA PALMIVORA. *Plant Dis. Rep.* 52(10):790-791. Oct. 1968. 1.9 P69P
- 7968 Klarman, W. L. CONIOTHYRIUM CANKER ON ORNAMENTAL PEAR. *Plant Dis. Rep.* 52(10):792. Oct. 1968. 1.9 P69P
- 7969 Kingsland, G. C. BARLEY SEED GERMINATION MAY BE REDUCED DURING STORAGE FOLLOWING ANAEROBIC TREATMENT. *Plant Dis. Rep.* 52(10):792-793. Oct. 1968. 1.9 P69P  
Method of controlling *Ustilago nuda*.  
Anaerobic treatment of "Early Marconee" barley seeds was responsible for a 20% decrease in germination during the first year subsequent to treatment, as compared with a 10% reduction in untreated seeds. Germination of treated seeds had decreased to almost 0 at the end of the second year after treatment, whereas germination of untreated seeds was about 50% of original germination.
- 7970 McCrum, R. C. PRUNUS VIRGINIANA, A NATURAL HOST FOR A MOSAIC VIRUS OF APPLE. *Plant Dis. Rep.* 52(10):794. Oct. 1968. 1.9 P69P
- 7971 Malek, R. B. THE DAGGER NEMATODE, XIPHINEMA AMERICANUM, ASSOCIATED WITH DECLINE OF SHELTERBELT TREES IN SOUTH DAKOTA. *Plant Dis. Rep.* 52(10):795-798. Ref. Oct. 1968. 1.9 P69P  
*Xiphinema americanum* Cobb was found in the soils of 95% of shelterbelts sampled in South Dakota and in association with all commonly planted tree species. Its frequent abundance, particularly in weed-free belts, and an apparent relationship between tree condition and associated nematode numbers indicate that *X. americanum* is a serious parasite of trees in the upper Great Plains and may be directly contributing to stunting, dieback, and premature decline of shelterbelt trees in this State. Nine other genera of parasitic nematodes were encountered, but only *Tylenchorhynchus acutus* and *Paratylenchus* spp. could be considered contributors to tree unthriftiness.
- 7972 Williams, E. B., and Brown, A. G. A NEW PHYSIOLOGIC RACE OF VENTURIA INAEQUALIS, INCITANT OF APPLE SCAB. *Plant Dis. Rep.* 52(10):799-801. Oct. 1968. 1.9 P69P  
A new physiologic race of *Venturia inaequalis* has been identified and designated as race 5. This race is differentiated by the pit gene type of resistance present in *Malus micromalus* and *M. microcarpa* 804. A second gene for resistance in *M. microcarpa* was found to be closely linked with the pit gene type and its effect was masked by this type of gene expression.
- 7973 Fisher, K. D., and Picarelli, C. J. OCCURRENCE OF A YELLOW-ROOT ROT OF SPINACH IN THE UPPER CONNECTICUT RIVER VALLEY. *Plant Dis. Rep.* 52(10):801-803. Oct. 1968. 1.9 P69P  
A yellow-root rot symptom pattern was identified in spinach planted in old potato soils of the Upper Connecticut River Valley. Neither *Fusarium oxysporum* f. *spinaceae* nor cucumber mosaic virus was found to be causally related to the condition. A *Fusarium solani* pathogenic to Irish potato was isolated from necrotic roots. It is thought to be a secondary invader, following severe root injury associated with nutrient stress.
- 7974 Hawksworth, F. G., and Staley, J. M. RHIZOSPHERA KALKHOFFII ON SPRUCE IN ARIZONA. *Plant Dis. Rep.* 52(10):804-805. Oct. 1968. 1.9 P69P  
The needle cast fungus, *Rhizosphaera kalkhoffii* Bubb., is damaging to planted blue spruce, *Picea pungens*, in many parts of the world, but it was not previously known in native blue spruce stands. It also attacks native Engelmann spruce, *P. engelmannii*, a new host for the fungus. Damage to spruce stands in Arizona is negligible.
- 7975 Gabrielson, R. L., Haglund, W. A., and Tompkins, D. R. CUCUMBER DAMPING-OFF AS AFFECTED BY PETROLEUM MULCH, FUNGICIDES, AND THEIR METHODS OF APPLICATION. *Plant Dis. Rep.* 52(10):806-810. Ref. Oct. 1968. 1.9 P69P  
Band treatments and surface incorporation of 1-chloro-2-nitropropane or sodium p-(dimethylamino)benzenediazosulfonate alone, or combined with petroleum mulch, significantly reduced damping-off caused by *Pythium ultimum* Trow and caused an increased growth response. In-furrow treatments were less effective. Banded petroleum mulch alone speeded emergence, in some cases reduced damping-off, increased weed growth, and usually produced an increased growth response. Band-incorporation is discussed as a low cost method of achieving the fumigation growth response.
- 7976 Lawrence, F. J., and Müller, P. W. EFFECTS OF VIRUS INFECTION ON THE STRAWBERRY CULTIVAR NORTHWEST. *Plant Dis. Rep.* 52(10):811-813. Oct. 1968. 1.9 P69P  
The number of runners on the strawberry cultivar Northwest was significantly reduced by mild yellow edge, crinkle, mild yellow edge plus mottle, and mild yellow edge plus crinkle, respectively, but not by mottle alone.  
Under the conditions of this experiment, there was no significant effect on the number of crowns, the number of flowers, the dry weights of the leaves, and roots and crowns, respectively.  
The mottle virus is apparently the least injurious of all the virus components in the Northwest cultivar.
- 7977 Obrero, F. P., and Trujillo, E. E. CONTROL OF POWDERY MILDEW OF PAPAYA. *Plant Dis. Rep.* 52(10):814-816. Oct. 1968. 1.9 P69P  
Combinations of a mixture of 2-(1-methylheptyl)-4,6-dinitrophenol and 2-(1-methylheptyl)-4,6-dinitrophenyl crotonate—coordination product of zinc ion and maneb (Kar.-zinc a maneb) and 6-methyl-2,3-quinoxaline-dithiol cyclic carbonate—coordination product of zinc ion and maneb (Mor.-zinc a maneb) were tested for the control of powdery mildew of papaya. Excellent control was obtained with mixtures of 1/4 lb Kar.-1, 2 lb zinc a maneb plus 12 oz of Triton B-1956 to 100 gallons of water per acre. Higher rates of Kar. and spray pressures above 100 psi were found injurious to papaya. Oidium caricae was found to be highly hydrophobic. A high ratio of surfactant in the fungicide mixture was necessary to wet the pathogen.
- 7978 Beniwal, S. P. S., and Srivastava, S. K. DOWNY MILDEW OF LENTIL (LENS ESCULENTA). *Plant Dis. Rep.* 52(10):817-818. Oct. 1968. 1.9 P69P  
Caused by an unidentified *Peronospora* sp.
- 7979 Pool, R. A. F., and Sharp, E. L. DISTRIBUTION OF CEPHALOSPORIUM [GRAMINEUM] STRIPE DISEASE OF WHEAT IN MONTANA. *Plant Dis. Rep.* 52(10):818-819. Oct. 1968. 1.9 P69P
- 7980 Hinds, T. E., Davidson, R. W., and Lombard, F. F. DECAY OF ENGLMANN SPRUCE [PICEA ENGELMANNII] BY LENTINELLUS MONTANUS IN COLORADO. *Plant Dis. Rep.* 52(10):820-821. Oct. 1968. 1.9 P69P  
A series of cultures isolated between 1944 and 1956 from decayed wood in living Engelmann spruce and lodgepole pine in Colorado have been identified as *Lentinellus montanus* O. K. Miller, which was described in 1965. The fungus causes a white rot which is usually associated with old fire scars and is described as a yellow stringy butt rot of the heartwood.
- 7981 Toole, E. R. WETWOOD IN COTTONWOOD [POPULUS DELTOIDES]. *Plant Dis. Rep.* 52(10):822-823. Oct. 1968. 1.9 P69P  
In 13 stands along the Mississippi River between Vicksburg and Memphis, 86% of the cottonwoods over 6 inches in diameter contained wetwood. Wetwood had higher moisture content and pH than normal sapwood. Gas pressure in affected trees was as high as 25.5 psi. A rod-shaped, gram-negative bacterium was consistently isolated from the wetwood.



- 7992 Walton, G. S. BORON TOXICITY ON CHRYS-  
ANTHEMUMS. Plant Dis. Rep. 52(10):824. Oct.  
1968. 1.9 P69P
- 7993 Granek, I. KEYS TO THE HETERODERA  
"GROUP" AND SPECIES OF THE HETEROD-  
ERA ROSTOCHIENSIS "GROUP." Plant Dis. Rep. 52(11):  
827-828. Nov. 1968. 1.9 P69P  
Plant nematodes.
- 7994 Zalasky, H., Fenn, O. K., and Lindquist, C. H.  
REACTIONS OF POPLARS TO INFECTION BY  
SEPTORIA MUSIVA AND DIPLODIA TUMEFACIENS AND  
TO INJURY BY FROST IN MANITOBA AND SASKAT-  
CHEWAN. Plant Dis. Rep. 52(11):829-833. Ref. Nov.  
1968. 1.9 P69P  
Disease incidence varied from very light to  
very high in 28 poplar clones that were artificially inocu-  
lated with *Diplodia tumefaciens*. The least susceptible  
clones were *Populus deltoides* cultivars FNS44-52, *Robus-  
ta Vernirubens*, *Robusta Bachelieri*, *Serotina de Selys*,  
and *Northwest*. With few exceptions, however, the disease  
incidence was high in the 12 clones that were naturally in-  
fected with *Septoria musiva*; *P. sargentii* was the least  
susceptible. Brooks-1, Northwest *P. x petrowskiana* and  
Volunteer appeared to be resistant to winter injury.
- 7995 Nariani, T. K., Raychaudhuri, S. P., and Shar-  
ma, B. C. EXOCORTIS IN CITRUS IN INDIA.  
Plant Dis. Rep. 52(11):834. Nov. 1968. 1.9 P69P
- 7996 Bagga, H. S. A SIMPLE TECHNIQUE FOR  
EVALUATING SYSTEMIC FUNGICIDES AND  
INSECTICIDES FOR CONTROL OF COTTON BOLL ROT.  
Plant Dis. Rep. 52(11):835-837. Nov. 1968. 1.9 P69P  
A simple laboratory technique was developed  
for preliminary evaluation of systemic compounds against  
cotton boll rot. The technique involved the use of a half-  
pint fruit jar containing the solution of the systemic com-  
pound with the pedicel of a cotton boll immersed in the  
solution while the boll rested on the screen. The tech-  
nique was evaluated by using four fungicides, and six  
insecticides.
- 7997 Ruehle, J. L. PLANT-PARASITIC NEMATODES  
ASSOCIATED WITH SOUTHERN HARDWOOD  
AND CONIFEROUS FOREST TREES. Plant Dis. Rep. 52  
(11):837-839. Nov. 1968. 1.9 P69P  
A geographical tabulation is presented to show  
new plant-parasitic nematode associations with southern  
forest hardwoods and conifers other than pines. It was  
compiled from results of a general nematode survey  
started by the Forest Service in 1961.
- 7998 Horst, R. K., and Nelson, P. E. LOSSES FROM  
FUSARIUM STEM ROT CAUSED BY FUSARIUM  
ROSEUM, IN COMMERCIAL PRODUCTION OF CUTTINGS  
OF CARNATION, DIANTHUS CARYOPHYLLUS. Plant  
Dis. Rep. 52(11):840-843. Nov. 1968. 1.9 P69P  
Data on incidence of *Fusarium* stem rot of car-  
nation, *Dianthus caryophyllus*, were maintained over a  
period of 2 years. Information was obtained concerning  
losses in different stages of stock culture propagation  
along with plant age of diseased plants for a large number  
of carnation cultivars. Losses were found to vary with  
plant age. Greater losses were found in plants 1-13 weeks  
old than in 1-year-old plants. Control methods and their  
importance are discussed.
- 7999 Brown, G. E. EXPERIMENTAL FUNGICIDES  
APPLIED PREHARVEST FOR CONTROL OF  
POSTHARVEST DECAY IN FLORIDA CITRUS FRUIT.  
Plant Dis. Rep. 52(11):844-847. Nov. 1968. 1.9 P69P  
Thiabendazole, 2-(4'-thiazolyl)benzimidazole  
(TBZ), and 1-(butylcarbamoyl)-2-benzimidazole carbamic  
acid, methyl ester (Fungicide 1991) applied 1 week before  
harvest reduced decay in "Hamlin" oranges during stor-  
age. Decay control with Fungicide 1991 was outstanding in  
this test as well as in trials involving preharvest applica-  
tions to "Robinson" tangerines and "Pineapple" and  
"Valencia" oranges. Control of decay was evident in  
Valencia oranges when fruits were harvested 5 weeks after  
Fungicide 1991 application. Feasibility is discussed  
concerning preharvest fungicide applications for the control  
of postharvest decay.
- 7990 Burton, C. L. SOUTHERN CORN LEAF  
BLIGHT ON SWEET CORN EARS IN TRANSIT.  
Plant Dis. Rep. 52(11):847-851. Nov. 1968. 1.9 P69P  
Southern corn leaf blight, caused by the imper-  
fect stage of *Cochliobolus heterostrophus* Drechs., was  
reported for the first time on sweet corn ears shipped to  
the midwest from Florida. Studies on the pathogenicity of  
the causal agent in relation to temperature, time of devel-  
opment, and methods of inoculation are described. Tem-  
peratures between 75° and 95°F favored rapid growth of  
the pathogen on ears; 85° was optimum. At 85° symptoms  
of disease development could be observed as early as 3  
days, regardless of inoculation methods; however, those  
temperatures that favored the growth of *C. heterostrophus*  
also favored the rapid development of contaminants natu-  
rally found on market corn. Experimentation showed that  
neither time, temperature, nor method of inoculation were  
sufficient cause per se to account for the presence of *C.  
heterostrophus* infection in this shipment. The disease was  
probably present and went unobserved at the time of ship-  
ment.
- 7991 Mankau, R. EFFECT OF NEMATOCIDES ON  
NEMATODE-TRAPPING FUNGI ASSOCIATED  
WITH THE CITRUS NEMATODE. Plant Dis. Rep. 52(11):  
851-855. Nov. 1968. 1.9 P69P  
The nematocidal 1,3-dichloropropene-1,2-di-  
chloropropane (DD) markedly reduced recovery of nema-  
tode-trapping fungi in citrus soil while 1,2-dibromoethane  
(EDB) caused a temporary effect and 1,2-dibromo-3-chlo-  
ropropane (DBCP) was not fungitoxic in outdoor microplot  
tests. In vitro, seven predacious fungus species were  
killed by sodium methylthiocarbamate (SMDE), DD,  
chloropicrin, 1,3-dichloropropene, and a mixture of DD  
and methyl isothiocyanate saturated atmospheres. Atmos-  
pheres saturated with DBCP were moderately fungistatic,  
and with EDB they were strongly fungistatic but not lethal.
- 7992 Rowell, J. B. CONTROL OF LEAF AND STEM  
RUSTS OF WHEAT BY COMBINATIONS OF  
SOIL APPLICATION OF AN 1,4-OXATHIN DERIVATIVE  
WITH FOLIAGE SPRAYS. Plant Dis. Rep. 52(11):856-  
858. Nov. 1968. 1.9 P69P  
*Puccinia graminis tritici*.  
Treatment with 2,3-dihydro-5-carboxanilido-6-  
methyl-1,4-oxathin-4,4-dioxide (DCMOD) in the seed fur-  
row at planting followed by sprays of DCMOD at mid-sea-  
son gave moderate control of leaf and stem rusts on  
spring wheat. Combined treatments of in-furrow applica-  
tions of DCMOD with late-season sprays of the formula-  
tion containing the product of zinc ion and manganous  
ethylenebis(dithiocarbamate) plus nickel sulfate hexahy-  
drate controlled rust better than late-season sprays of the  
latter formulation alone. Thus, control of the early stages  
of the development of rust epidemics on wheat by DCMOD  
applied at planting appears to be a promising means of  
increasing the effectiveness of foliage sprays applied  
late in the season.
- 7993 Strandberg, J. O. OCCURRENCE OF SPONGO-  
SPORA SUBTERRANEA F. SP. NASTURTHII  
CAUSING CROOK ROOT OF WATERCRESS IN FLORIDA  
AND PENNSYLVANIA. Plant Dis. Rep. 52(11):859. Nov.  
1968. 1.9 P69P
- 7994 Sabar, Z., and Shalla, T. A. PRODUCTION OF  
PLANT VIRUS ANTISERUM IN A HORSE.  
Plant Dis. Rep. 52(11):860-862. Nov. 1968. 1.9 P69P  
A *Conemerra* stallion was immunized by in-  
jections of increasing amounts of purified tobacco mosaic  
virus (TMV). Over a period of 12 weeks a total of about  
800 mg of TMV was injected. Approximately 19 liters of  
blood were obtained during a period of 15 weeks, yielding  
about 8 liters of antiserum having a titer of about 1/1024.  
This antiserum compared favorably with Anti-TMV ob-  
tained from rabbits. No ill effects were observed in the  
horse during immunization and bleeding periods. The cost  
of the Anti-TMV obtained from the horse was not higher  
than could be expected if rabbits were used and the  
amount of labor involved was considerably less.

7995 Williams, L. E., and others. SEED TRANS-MISSION STUDIES OF MAIZE DWARF MOSAIC VIRUS IN CORN. Plant Dis. Rep. 52(11):863-864. Nov. 1968. 1.9 P69P

W. R. Findley, E. J. Dollinger, and R. M. Ritter, joint authors.

Only two of 29,735 seedlings from seed harvested from maize dwarf mosaic virus-infected plants were found to contain virus. Dent corn inbreds and single crosses and sweet corn and popcorn hybrids were included in the 477 strains tested. Seeds planted were from plants infected in the field but probably only MDMV type "A" was involved.

7996 Blampied, G. D., and Purnasiri, A. PENICILLIUM AND BOTRYTIS ROT OF MCINTOSH APPLES HANDLED IN WATER. Plant Dis. Rep. 52(11):865-867. Nov. 1968. 1.9 P69P

A survey of inoculum level in water tanks used to handle apples in packing-houses showed that levels of 7,000-13,000 total germinated propagules per ml of water were common; levels of 1,000-7,000 germinated *Penicillium expansum* propagules per ml of water were common.

The relationship between the levels of *Penicillium expansum* and *Botrytis* sp. spores in water tanks and rot incidence was studied. As the storage season progressed, the incidence of rot increased at each level of inoculum tested.

7997 Blampied, G. D., and Purnasiri, A. THIABENDAZOLE CONTROL OF PENICILLIUM [EX-PANSUM] ROT OF MCINTOSH APPLES. Plant Dis. Rep. 52(11):867-871. Nov. 1968. 1.9 P69P

Storage.

The effectiveness of thiabendazole, 2-(4'-thiazolyl)benzimidazole (TBZ), in the control of *Penicillium* rot of McIntosh apples was found to be related to the level of inoculum, the concentration of TBZ, the length of the time interval between exposure to the inoculum and treatment with TBZ and the length of the 70°F holding period.

7998 John, V. T. IDENTIFICATION AND CHARACTERIZATION OF TUNGRO, A VIRUS DISEASE OF RICE IN INDIA. Plant Dis. Rep. 52(11):871-875. Nov. 1968. 1.9 P69P

A disease resembling tungro in symptoms, vector acquisition and inoculation feeding periods, incubation of the virus in the vector and host, nonpersistence of the virus in the vector, and reaction to a differential variety is reported. It is concluded that tungro is present in India, and its affinity to a similar disease, leaf yellowing, is discussed.

7999 Zimmer, D. E., and Urie, A. L. INFLUENCE OF FOLIAGE RUST ON YIELD, TEST WEIGHT, AND OIL PERCENTAGE OF SAFFLOWER SEED. Plant Dis. Rep. 52(11):876-878. Nov. 1968. 1.9 P69P

Rust (*Puccinia carthami* Cda.) was introduced into field-plots of safflower (*Carthamus tinctorius*) at the time of planting, and controlled throughout the season in half of the plots of each variety or line by foliar applications of a maneb fungicide. In 1963, 1964, and 1966 heavy rust infection was limited to the lower leaves of the unsprayed plots until after full bloom and did not significantly reduce seed yield, test weight, or oil percentage of the seed. Heavy infection of both lower and upper leaves in the unsprayed plots occurred prior to full bloom in 1965 and significantly reduced yield of the rust-susceptible entries. Yield of some susceptible varieties and lines was reduced more than the yield of others. Although not significant, oil percentage of seed harvested from rusted plots tended to be slightly higher than the oil percentage of seed harvested from unrusted plots.

8000 Nelson, R. R., and Kline, D. M. OCCURRENCE IN COCHLIOBOOLUS HETEROSTROPHUS OF CAPACITIES TO BLIGHT GRAMINEOUS HOSTS. Plant Dis. Rep. 52(11):879-882. Nov. 1968. 1.9 P69P

One hundred and fifty isolates of *Cochliobolus heterostrophus* Drechs. from diverse geographic areas and source hosts were tested for their capacities to induce blight or lesion reactions on 34 gramineous test species. Twenty-seven isolates induced blight reactions on single hosts and 16 additional isolates blighted from 2 to 7 species. There were 26 different single hosts and combinations of 2 or more hosts exhibiting blight symptoms, indicating that a number of blight mechanisms are operative among the various isolates. The possible relationship between blight-inducing abilities and toxin mechanisms is discussed.

8001 Skelly, J. M., Carroll, R. B., and Lukezic, F. L. A NEW DISEASE OF CROWNVETCH, CORONILLA VARIA, CAUSED BY SCLEROTINIA TRIFOLIORUM. Plant Dis. Rep. 52(11):882-886. Nov. 1968. 1.9 P69P

A new disease of crownvetch plants was observed at several locations in central Pennsylvania during the summers of 1965, 1966, and 1967. Initially, symptoms consisted of a general chlorosis of the foliage. This was followed by wilting and death of the entire aboveground portion of the plants, accompanied by a basal rot of the stems. Dead stems were found to contain sclerotia. Numerous isolations from necrotic tissues and sclerotia, along with pathogenicity studies, led to the conclusion that the disease is caused by *Sclerotinia trifoliorum*. The fungus was not pathogenic on 6-month-old "DuPuits" alfalfa under the greenhouse or growth chamber conditions tested. That it was pathogenic, however, on four different clonal lines of crownvetch tested, was indicated. It is suggested that this disease could become serious during cool, wet seasons.

8002 Dean, C. E., and Clark, F. VEINBANDING ON TOBACCO IN NORTH FLORIDA. Plant Dis. Rep. 52(11):887-889. Nov. 1968. 1.9 P69P

Potato virus Y has been occurring on tobacco at the North Florida Experiment Station for several years. During 1967 and 1968, the virus was particularly severe on sun-grown plants, but symptoms were very light or nonexistent where plants were grown under the shade covering. This is the usual practice with cigar-wrapper tobacco plots. From such a center, it spread to other plants very quickly, even though aphid control seemed adequate. Symptoms included typical veinbanding, mottling of the leaf tips together with a general rough appearance, and necrotic spotting. In early stages of infection there was considerable stunting; however, the plants appeared to overcome this to a great extent in later stages of development. No attempt was made to evaluate the leaf quality of infected plants.

8003 Lownsbery, B. F., and others. RESPONSES TO POSTPLANTING AND PREPLANTING SOIL FUMIGATION IN CALIFORNIA PEACH, WALNUT, AND PRUNE ORCHARDS. Plant Dis. Rep. 52(11):890-894. Ref. Nov. 1968. 1.9 P69P

J. T. Mitchell, W. H. Hart, F. M. Charles, M. H. Gerds, and A. S. Greethead, joint authors.

A study of 37 orchard trials of nematocidal soil fumigants applied before and after planting peaches, walnuts, and prunes shows that a positive growth or yield response resulted from 9 of 11 (82%) of the preplanting applications; such a response was obtained in only 8 of 26 (31%) of the postplanting applications. Failure of the postplanting treatment (2.5 gallons 1,2-dibromo-3-chloropropane per acre) to reduce the populations of nematodes within roots to a less than limiting level is believed to be a principal cause of the low frequency of success.

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*Cephalosporium gregatum*.

8005 Stewart, D. M., and Roberts, B. J. PREVALENCE OF PHYSIOLOGIC RACES OF PUCCINIA GRAMINIS F. SP. AENAE AND TRITICI IN THE USA IN 1966. Plant Dis. Rep. 52(11):897-901. Nov. 1968. 1.9 P69P

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8006 Stover, R. H., and Richardson, D. L. "PELIPITA", AN ABB BLUGGEOE-TYPE PLANTAIN [BANANAS] RESISTANT TO BACTERIAL AND FUSARIAL WILTS. Plant Dis. Rep. 52(11):901-903. Nov. 1968. 1.9 P69P

"Pelipita", and ABB Musa, is an important source of peasant and livestock food in Central America and many other tropical areas of the world. It is being destroyed by *Fusarium oxysporum* f. cubense Race 2 and an insect-transmitted strain of *Pseudomonas solanaceae*. A disease-resistant substitute for Bluggoe called "Pelipita" was detected in the Musa collection of the United Fruit Company in Honduras. Pelipita originated in the Philippine Islands and will eventually replace the disease-susceptible Bluggoe in the American tropics.

- 8007 Evans, G. SOME NEW HOSTS FOR VERTICILLIUM NIGRESCENS. Plant Dis. Rep. 52(11): 904. Nov. 1968. 1.9 P69P  
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- 8009 Sweet, W. W. STUDIES ON COMPARATIVE ANATOMY OF GOATS AND DAIRY COWS. U. S. Agr. Res. Serv. ARS 44-185, 12 p. Oct. 1967. A49.9 R31A  
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- 8009 McDaniel, B. T., and others. ARTIFICIAL INSEMINATION (AI) PARTICIPATION REPORT FOR THE UNITED STATES, 1967. U. S. Agr. Res. Serv. ARS 44-204, 34 p. May 1968. A49.9 R31A  
C. A. Rampendahl, R. D. Plowman, and J. J. Corbin, joint authors.  
Dairy cattle.
- 8010 Lipton, W. J. SALVAGING OF UNRIPE PROCESSING TOMATOES HARVESTED BY MACHINE. U. S. Agr. Res. Serv. ARS 51-22, 9 p. May 1968. A280.39 R31A  
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Unripe processing tomatoes harvested by machine ripened to a satisfactory color during storage. Machine-harvested field-run lots ranging from mature-green to light-pink required about 10 days at 68° F. or 8 days at 77° for an 80 to 90 percent yield of ripe fruits. Machine-harvested mature-green fruits ripened faster than hand-harvested fruits. However, ethylene production by individual fruits was not influenced by method of harvest but only by stage of ripeness of the fruits. Treatment with ethylene (200 to 400 p.p.m.) for 2 to 4 days hastened the ripening of both mature-green and field-run tomatoes. However, its use would require reasonably airtight storage facilities, which would add to handling costs.  
The incidence of decay varied greatly among lots. It averaged about 13 percent in tomatoes held in jars; it was usually lower in tomatoes held in lugs.  
Salvage of 2 tons of initially unripe tomatoes per acre would yield about 300,000 tons of usable fruit with a farm value of \$6 million in California alone. This fruit is now wasted.
- 8011 Schomer, H. A. EFFECTS OF HYDROCOOLING ON THE DESSERT QUALITY AND STORAGE LIFE OF APPLES IN THE PACIFIC NORTHWEST. U. S. Agr. Res. Serv. ARS 51-24, 6 p. June 1968. A280.39 R31A  
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Conference on Citrus Chemistry and Utilization, Winter Haven, Florida, 1966. PROCEEDINGS. U. S. Agr. Res. Serv. ARS-72-59, 35 p. May 1967. A381 R31
- 8013 Fisher, J. F., and Nordby, H. E. ISOLATION, CHARACTERIZATION AND DIFFERENTIATION OF SOME COUMARINS AND FLAVONOIDS IN GRAPEFRUIT. U. S. Agr. Res. Serv. ARS-72-59:1-4. May 1967. A381 R31
- 8014 Yokoyama, H., and White, M. J. SOME ASPECTS OF CAROTENOID PIGMENT FORMATION IN DESERT GRAPEFRUIT. U. S. Agr. Res. Serv. ARS-72-59:5-7. May 1967. A381 R31
- 8015 Shaw, P. E., Tatum, J. H., and Berry, R. E. REVIEW OF ANALYSES OF "OFF-FLAVORS" IN AGED FOAM-MAT ORANGE [JUICE] CRYSTALS AND MODEL SYSTEMS. U. S. Agr. Res. Serv. ARS-72-59:7-8. May 1967. A381 R31
- 8016 Fisher, J. F., Nordby, H. E., and Kew, T. J. A THIN-LAYER CHROMATOGRAPHIC-COLORIMETRIC METHOD FOR THE DETERMINATION OF NARINGIN IN GRAPEFRUIT. U. S. Agr. Res. Serv. ARS-72-59:9-12. May 1967. A381 R31
- 8017 Purcell, A. E., and others. THE EFFECT OF TEMPERATURE ON THE QUALITY AND COLOR OF TEXAS RED GRAPEFRUIT. U. S. Agr. Res. Serv. ARS-72-59:13-14. May 1967. A381 R31  
R. H. Young, E. F. Schultz, and F. I. Meredith, joint authors.
- 8018 Scott, W. C., and Veldhuis, M. K. EXPERIENCES WITH BROMATE METHOD OF ESTIMATING RECOVERABLE OIL IN CITRUS JUICES. U. S. Agr. Res. Serv. ARS-72-59:16-19. May 1967. A381 R31  
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- It is planned that sufficient additional data will be obtained during the coming season, by formal collaboration of several laboratories, to justify requesting the Association of Official Analytical Chemists to adopt the bromate method as an Official Method for the determination of recoverable oil in citrus juice products.
- 8019 Berry, R. E., Moshonas, M. G., and Wagner, C. J. FLAVORING EFFECTS OF NOOTKATONE IN GRAPEFRUIT JUICE. U. S. Agr. Res. Serv. ARS-72-59:20-23. May 1967. A381 R31
- 8020 Froscher, J. L., and Berry, R. E. A REVIEW OF FREEZE-DRYING STUDIES AT WINTER HAVEN ON CITRUS PRODUCTS. U. S. Agr. Res. Serv. ARS-72-59:23-25. May 1967. A381 R31
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- 8022 Mazzeno, L. W. HIGH PROTEIN RICE FLOURS. U. S. Agr. Res. Serv. ARS-72-60, 7 p. June 1967. A381 R31
- 8023 Shaw, R. REDUCING THE OIL CONTENT OF POTATO CHIPS BY CONTROLLING THEIR TEMPERATURE AFTER FRYING. U. S. Agr. Res. Serv. ARS-73-88, 9 p. May 1968. A381 R31A  
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- 8025 Senti, F. R. ROLE OF OILSEEDS IN WORLD FOOD SUPPLY. U. S. Agr. Res. Serv. ARS-74-43:3-12. Sept. 1967. A381 R31Ab  
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- 8027 Howell, R. W. PLANT SCIENCE RELATED TO UTILIZATION. U. S. Agr. Res. Serv. ARS-74-43:20-23. Sept. 1967. A381 R31Ab  
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- 8034 Bratcher, S., and Kemmerer, A. R. AUTOXIDATION AND ANTIOXIDANTS IN SAFFLOWER OIL. U. S. Agr. Res. Serv. ARS-74-43:53-57. Sept. 1967. A381 R31Ab
- 8035 Fuller, G. HIGH-TEMPERATURE STABILITY OF SAFFLOWER OIL. U. S. Agr. Res. Serv. ARS-74-43:58-63. Sept. 1967. A381 R31Ab
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8046 Veterinary Biologics Division. ESTABLISHMENTS HOLDING U. S. VETERINARY LICENSES TO PRODUCE BIOLOGICAL PRODUCTS IN EFFECT JULY 1, 1967. Hyattsville, Maryland, 1967. 35 p. aRA401.A3U5

#### AGRICULTURAL STABILIZATION AND CONSERVATION SERVICE

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#### BUDGET AND FINANCE, OFFICE OF

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#### CONSUMER AND MARKETING SERVICE

8049 Egrest, H. L. RIGHT ON THE RECORD. Agr. Marketing [Washington] 13(10):3. Oct. 1968. A280.38 Ag8

Legal aspects of policy formation.  
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8050 Driggs, L. W. NEW LIFE FOR THE LOWLY FOWL. Agr. Marketing [Washington] 13(10):4-5. Oct. 1968. A280.38 Ag8  
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8051 Steinmetz, H. M. THE WHOLESOME MEAT ACT [OF 1967]: HOW IT'S GEARED TO SMALL MEAT PLANTS. Agr. Marketing [Washington] 13(10):10-11. Oct. 1968. A280.38 Ag8

8052 Castile, M. A. INSPECTING GRADES ON THE VINE. Agr. Marketing [Washington] 13(10):12-13. Oct. 1968. A280.38 Ag8  
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8053 Pettus, D. M. REVISED GRAIN STANDARDS ACT [OF 1916]; A MODERN LAW FOR MODERN TIMES. Agr. Marketing [Washington] 13(10):14. Oct. 1968. A280.38 Ag8

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## ECONOMIC RESEARCH SERVICE

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8060 Rahe, D. H., and Lemon, I. E. U.S. AGRICULTURAL EXPORT SHARES BY REGION AND STATE, FISCAL YEAR, 1968. Foreign Agr. Trade U. S., Nov. 1968:7-19, map. A286.9 Ag8

8061 DeBlois, E. N. SMALLER COMMERCIAL SALES, DUE PARTLY TO LOWER PRICES, BROUGHT U.S. AGRICULTURAL EXPORTS IN FISCAL YEAR 1968 TO THIRD HIGHEST LEVEL. Foreign Agr. Trade U. S., Nov. 1968:20-52. A286.9 Ag8

8062 Pearson, W. E., and Hedges, B. D. IMPLICATIONS OF COMMON MARKET MEMBERSHIP FOR BRITISH AGRICULTURE. U. S. D. A. Econ. Res. Serv. ERS- Foreign 211.10 p. May 1968. A281.9 Ag83  
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Policy changes affecting food prices and trade. Summary, p. 1-2.

8063 Chambliss, M. T. CAMEROON'S AGRICULTURAL ECONOMY IN BRIEF. U. S. D. A. Econ. Res. Serv. ERS- Foreign 215.8 p., map. Mar. 1968. A281.9 Ag83

Cameroon has an expanding economy which relies on both Government planning and free enterprise. Agricultural production, primarily of tropical products, accounts for 40 percent of the gross national product. Two-thirds of agricultural production is on a subsistence basis. Major cash crops are cocoa, coffee, bananas, cotton, peanuts, rubber, and oil palm products. The Government is encouraging the expansion and diversification of agricultural production.

Since Cameroon's main export crops are tropical, they do not compete with U.S. agricultural products. Coffee and cocoa are the major Cameroonian products purchased by the United States. In most years, rice and other grains and tobacco are the most important U.S. exports to Cameroon.

8064 Rogers, G. B., Gallimore, W. W., and Faber, F. L. SHIFTS IN THE LOCATION OF EGG, BROILER, AND TURKEY PRODUCTION. U. S. D. A. Econ. Res. Serv. PES-254:8-9. Nov. 1968. 1.9 Ec752F PES

8065 Clayton, L. MILL CONSUMPTION OF RAW WOOL IN 10 MAJOR MANUFACTURING COUNTRIES. U. S. D. A. Econ. Res. Serv. TWS-65:17-44. Oct. 1968. 1.9 Ec752Ww

## FARMER COOPERATIVE SERVICE

8066 Byrne, R. J. FCS, [CROPS] DIVISION AIM: IMPROVE CROP MARKETING. News Farmer Coop. 35(8):3-4, 23. Nov. 1968. 166.2 N47

8067 Angevine, D. W. FCS GIVEN ADDED JOB. News Farmer Coop. 35(8):4. Nov. 1968. 166.2 N47

Enforcement of Fair Practices Act that establishes standards for handlers and processors who deal with farmers.

8068 Wilson, D. W. CO-OP CATTLE FEEDING IN THE SOUTHEAST; FACTS FOR DECISION MAKING. U. S. Farmer Coop. Serv. Inform. 58, 13 p., map. June 1968. A280.29 F221

8069 Miller, G. F. FILING RAIL GRAIN LOSS CLAIMS. U. S. Farmer Coop. Serv. Inform. 61, 21 p. July 1968. A280.29 F221

## FEDERAL EXTENSION SERVICE

8070 Kowalski, R. E. KEEPING IN TUNE WITH ENTOMOLOGY. Ext. Serv. Rev. 39(10):3. Oct. 1968. 1 Ex892Ex

In Iowa, as in many States, county Extension workers have had at most one course in entomology during their undergraduate days. In many cases, the course was taken 10 to 15 years ago.

Insect control procedures, as well as insect populations, have changed rapidly. In addition, the rapid increase in the educational levels of farmers is causing them to look for answers to more difficult and technical questions.

Recognizing these things, the entomology department at Iowa State University started an intensive short course in entomology for county and area Extension workers in the summer of 1967.

8071 Rosenkrans, D. B. REVIVAL MEETINGS—AGRICULTURE STYLE. Ext. Serv. Rev. 39(10):4-5. Oct. 1968. 1 Ex892Ex

8072 Stanton, H. R. EXTRA \$\$\$ FROM FARM WOODLOTS. Ext. Serv. Rev. 39(10):6-7. Oct. 1968. 1 Ex892Ex

New Jersey Extension encourages recreation enterprises

8073 Kunau, E. WE ASKED IOWA 4-H LEADERS ABOUT OUR HOME IMPROVEMENT PROGRAM. Ext. Serv. Rev. 39(10):8-9. Oct. 1968. 1 Ex892Ex

8074 Shipman, J. A. EXTENSION FINDS NEW CO-OPERATOR. Ext. Serv. Rev. 39(10):10-11. Oct. 1968. 1 Ex892Ex

Aid to handicapped homemaker helps Oklahoma County Extension establish new agency contact [Oklahoma Vocational Rehabilitation Service].

8075 White, M. E., and King, H. D. SCA AND ETN PERMIT STATEWIDE MEETINGS WITHOUT TRAVEL. Ext. Serv. Rev. 39(10):12-13. Oct. 1968. 1 Ex892Ex

The county neighborhood "party line" of early telephone has taken a modern turn with University Extension in Wisconsin. And it has chosen a strong partner in the more recent "closed circuit" radio.

Today's users call the first ETN (for Educational Telephone Network) and the second SCA (for Subsidiary Communications Authority).

The networks tie the Madison campus to 205 receiving and sending installations throughout Wisconsin. With the system, administrators hold statewide staff conferences, specialists confer with agents, agents confer with each other, specialists train 4-H leaders, medical specialists present newest technology to physicians, nursing specialists do the same for RN's, teaching faculty present credit courses to high school home economics teachers, and independent study instructors hold individual conferences with students.

8076 Whitham, G. E. CONNECTICUT'S IMPACT TEAM. Ext. Serv. Rev. 39(10):14-15. Oct. 1968. 1 Ex892Ex

Serving Extension's "fourth dimension"—community resource development.

## FOREIGN AGRICULTURAL SERVICE

8077 Ioanes, R. A. A LOOK INTO THE PAST AND FUTURE OF U.S. RICE EXPORTS. Foreign Agr. 6(41):2-3. Oct. 7, 1968. A281.9 F76Fo

Administrator of Foreign Agricultural Service sees another good year ahead for U.S. rice exports but some increase in carryover stocks following a record U.S. rice crop in 1968.

8078 Baehr, H. A. AUSTRIA ADJUSTS SOFT WHEAT, RYE PRICES. Foreign Agr. 6(41):4. Oct. 7, 1968. A281.9 F76Fo

The second of two recent steps by the Austrian Government to curb domestic wheat production and to provide an incentive for farmers to grow more rye and feedgrains became effective on July 1, 1968. On that date the guaranteed producer price for soft wheat received by farmers was reduced by about 3 percent as of the beginning of the 1968-69 crop year, and the total producer price for rye was raised by about 2.5 percent. The earlier step was an increase in the gate prices for a number of important feedgrains late in 1967.

8079 Tetro, R. C. ITALY MOVES AHEAD WITH ITS GREEN PLAN. Foreign Agr. 6(41):6. Oct. 7, 1968. A281.9 F76Fo

Italy's agriculture midway through the second Green Plan (1965-67) shows progress accompanied by frustration, heated debate over farm policy on all levels, and the goal of EEC competition continuing to press for more and better agricultural production. In the broadest sense, Italian farmers have been pleased with the Green Plan and its workings since it was initiated in 1960. Green Plan II continues the same program, providing \$40 million for projects geared to the modernization of Italy's agriculture that is imperative, if Italy is to compete with its partners in the Common Market.

**8090** Missiaen, E. NATIONHOOD SET FOR EQUATORIAL GUINEA, KEY AFRICAN COCOA GROWER. Foreign Agr. 6(41):7-8. Oct. 7, 1968. A281.9 F76Fo

Includes coffee and lumber. Equatorial Guinea—one of Africa's smallest countries, but its fifth largest cocoa exporter—steps from its position as a Spanish colony to nationhood this Sunday, October 12. However, this political severance from Spain is not expected to affect the strong economic ties now existing between the two countries.

**8091** Schmittner, J. A. THE SUPPLY-DEMAND IMBALANCE OF SOYBEANS. Foreign Agr. 6(42):4-5. Oct. 14, 1968. A281.9 F76Fo

U. S. policy. Undersecretary of Agriculture discusses the world abundance of soybeans and the opportunities and responsibilities which fall on producing countries.

**8092** Sugiyama, M. HOW AID USES HIGH-PROTEIN OILSEEDS TO IMPROVE DIETS. Foreign Agr. 6(42):6. Oct. 14, 1968. A281.9 F76Fo

**8093** Cimianian, A. BETTER YIELDS BOOST ROMANIAN OILSEED CROPS. Foreign Agr. 6(42):7. Oct. 14, 1968. A281.9 F76Fo

Sunflower seeds. In recent years, Romania has made great strides in expanding its oilseed crops—gains which are largely the result of higher yields and are mirrored in a growing export trade.

**8094** Pelaez, E. FILIPINOS WORK FOR EFFICIENT COCONUT OIL INDUSTRY. Foreign Agr. 6(42):7. Oct. 14, 1968. A281.9 F76Fo

**8095** Wood, A. S. RECORD WORLD WHEAT CROP IN THE MAKING. Foreign Agr. 6(42):8. Oct. 14, 1968. A281.9 F76Fo

World production of breadgrains—wheat and rye—is moving toward a new record of 324 million metric tons this year, judging by crop information available in mid-September. Making up the record total is an expected 294-million-ton wheat crop and rye production estimated at 30.2 million tons.

**8096** Boulware, J. H. INDIA GIVES HIGHEST PRIORITY TO AGRICULTURE. Foreign Agr. 6(42):9-10. Oct. 14, 1968. A281.9 F76Fo

Some \$643.2 million, 20.6 percent of a total of \$3.1 billion, has been allocated for agricultural programs, community development, cooperation, irrigation, and flood control in the Annual Plan, 1968-69, presented to the Indian Parliament on August 1. In addition, finances have been provided in the industrial sector for production and supply of such agricultural inputs as fertilizers, pesticides, and agricultural implements. An outstanding feature of the new plan is the provision for an additional \$186.2 million for building up buffer stocks of foodgrains.

**8097** Dodson, J. C. NEW MARKETS FOR ARGENTINA'S COOKED-AND-FROZEN BEEF. Foreign Agr. 6(42):10. Oct. 14, 1968. A281.9 F76Fo

Japan and Canada have agreed to permit entry of cooked-and-frozen beef from Argentina, following a study of the product by both countries. Until now these countries have declined to import Argentine beef because of the foot-and-mouth disease problem. A factor in the negotiations that led to the two new outlets was Argentina's unfavorable balance of trade with both countries.

**8098** Larsen, M. R. MAINLAND CHINA'S AGRICULTURE SUFFERS SETBACK IN 1968. Foreign Agr. 6(43):2-5, map. Oct. 21, 1968. A281.9 F76Fo

Agricultural production in Mainland China in 1968 has checked and faltered following a substantial farm-produce upswing in 1967.

**8099** Lege, F. M. IN VIEW OF BUMPER CROP AUSTRALIAN FARMERS ACCEPT NEW WHEAT PROGRAM. Foreign Agr. 6(43):5. Oct. 21, 1968. A281.9 F76Fo

Australian farmers, after a month of dissent, have agreed to accept the controversial Wheat Stabilization Scheme that was put forward by their government in late August.

The program, which was endorsed reluctantly on September 19 by the Australian Wheatgrowers' Federation and now awaits approval by the legislatures of wheat-producing States, is to be in effect for 5 years, beginning with the 1968-69 season. On the whole, it reduces government payments to wheat producers by substantially lowering the guaranteed price for grain moving into export and by revamping the index used to calculate the price for grain sold on the home market.

**8090** De Verteuil, B. TRINIDAD AND TOBAGO: ONE NATION'S PROGRESS TOWARD FEEDING ITSELF. Foreign Agr. 6(43):6-8. Oct. 21, 1968. A281.9 F76Fo

Trinidad and Tobago, a tiny, two-island country of less than 1.3 million acres and slightly more than 1 million people, is taking great strides towards agricultural self-sufficiency. From an agricultural economy based primarily on growing sugar and tree crops for export, the country has expanded—in the 6 years since it became independent—into an active producer of meats, dairy products, food crops, fruits, and vegetables for domestic use. And tomorrow promises substantially greater gains.

How did this happen in so short a time? The answer lies in an ambitious farm program that has combined the resources and talents of government and private enterprise.

**8091** West, Q. M. AN EVALUATION OF WORLD FARM GAINS AND FOOD PROBLEMS. Foreign Agr. 6(44):2-5. Oct. 28, 1968. A281.9 F76Fo

New agricultural technology will have great impact on the world food situation—but it is not a magic wand that will solve all the problems of food-deficit countries. The United States and other major food exporters will continue to be called upon to help feed less-developed countries for a number of years.

**8092** West, Q. M. TRENDS IN WORLD GRAIN PRODUCTION AND TRADE. Foreign Agr. 6(44):5. Oct. 28, 1968. A281.9 F76Fo

Trends in long-term world grain and rice production and trade are of great importance to U. S. farmers and exporters and affect both farm income and the national economy. The United States has traditionally been the world's leading exporter in two out of three categories—wheat and coarse grains—and is now the chief exporter in the third—rice.

**8093** Harris, D. CURRENT TRENDS IN WORLD TRADE IN HIDES AND SKINS. Foreign Agr. 6(44):6. Oct. 28, 1968. A281.9 F76Fo

**8094** Anderson, R. E. PRODUCTION CONTROLS AND SOIL BANK URGED FOR THE EEC. Foreign Agr. 6(44):7. Oct. 28, 1968. A281.9 F76Fo

**8095** Ransom, E. T. IRISH FARMERS DEMAND HIGHER SUPPORT PRICES FOR MILK. Foreign Agr. 6(44):7. Oct. 28, 1968. A281.9 F76Fo

Ireland's two leading farmer organizations—the National Farmers' Association (NFA) and the Irish Creamery Milk Suppliers' Association (ICMSA) recently joined forces in a quest for an increase in the government's support price for manufacturing milk. The NFA wants an increase of 4 cents per imperial gallon; the ICMSA wants a 3-cent-a-gallon increase. (An imperial gallon is about one-fifth larger than a U. S. gallon.)

**8096** Singleton, C. B. UGANDA KEYS 1971 GOALS TO AGRIBUSINESS. Foreign Agr. 6(44):8-9. Oct. 28, 1968. A281.9 F76Fo

Uganda's development of a sound economic base—a problem facing all the developing countries of Africa—rests largely in the growth of its agriculture and related industries. With that in mind, Uganda has begun to work out its second 5-year plan (1966-71) attacking the major structural weakness of the economy—its dependence on the fluctuating world market prices for cotton and coffee.

**8097** Magley, R. S. NEW LAND AND METHODS FOR BRAZIL'S COTTON. Foreign Agr. 6(44):10-11. Oct. 28, 1968. A281.9 F76Fo

Yield and acreage increases.

**8098** Kiger, H. C. PAST AND PROSPECTS; U. S. TOBACCO IN THE EXPORT MARKET. Foreign Agr. 6(45):2-4. Nov. 4, 1968. A381.9 F76Fo

**8099** Scholz, W. L. BRITISH GRAIN PRODUCTION TO DECLINE THIS YEAR. Foreign Agr. 6(45):4. Nov. 4, 1968. A281.9 F76Fo

Rains this year have squelched Great Britain's chances of coming up with another record grain crop, and that country now faces a production nearly 10 percent off the 1967 record and far down the line as far as quality is concerned. In fact, so great are the losses in quality, that British millers may find it necessary to import as much as 1 million more tons of wheat.



- 9100** Lege, F. M. AUSTRALIA'S COTTON CROP; BIGGEST AND BEST EVER. Foreign Agr. 6 (45):5. Nov. 4, 1968. A281.9 F76Fo  
Cotton production in Australia during the 1967-68 season reached a new record of 149,727 bales, 77.6 percent above the 1966-67 crop. Larger plantings and exceptionally favorable weather during the second half of the growing period were mainly responsible. Warm and dry harvesting weather resulted in excellent grades, and the overall quality of the crop is considered the best yet achieved.
- 9101** Traeger, F. W. PHILIPPINE COPRA; PRODUCTION AND EXPORTS DROP. Foreign Agr. 6(45):10. Nov. 4, 1968. A281.9 F76Fo  
Philippine copra production in 1968 is expected to total about 1.2 million long tons, 15 percent less than in 1967, which in turn was 15 percent below the record 1966 level. During the first half of 1968, output was some 17 percent below the first half of 1967, but production in the second half should show substantial improvement.
- 9102** Higgins, W. J. MEXICO'S PRODUCTION OF HORTICULTURAL PRODUCTS FOR EXPORT. U. S. Foreign Agr. Serv. FAS-M-199, 10 p., map. June 1968. A281.9 F76Fm  
Fruit and vegetables. Summary, p.1.
- 9103** Silcox, W. B. WORLD IMPORT DUTIES AND OTHER ENTRY CHARGES ON DAIRY PRODUCTS. U. S. Foreign Agr. Serv. Foreign Agr. Rep. 131, 70 p. Apr. 1968. 1.943 F763
- FOREST SERVICE**
- 9104** Kurth, T. COMBINATION HELITANKER-AIR TANKER ATTACK ON THE PINE CREEK FIRE. Fire Contr. Notes [Washington] 29(4):3-5, map. Fall 1968. 1 F766Fi  
A combined helitanker-air tanker attack can safely and effectively help control a forest fire if communication is constantly maintained between all aircraft and the ground and if operational procedures are followed. Excellent helicopter control can be maintained if all drop missions are directed by an Air Tanker Boss in a lead plane. These two points were demonstrated during the Pine Creek Fire of Aug. 9-11, 1967, on the Cleveland National Forest, Calif. The primary mission of the air tankers was to reduce fire intensity. Helitankers were assigned to specific targets that threatened to spot across or burn around retardant drops, to make the first attack on spot fires, and to support handline construction crews. An Air Tanker Boss in a T-34 lead plane directed all retardant drops.
- 9105** Boren, J. E. TRAINING PAYS OFF. Fire Contr. Notes [Washington] 29(4):5, 16. Fall 1968. 1 F766Fi  
Finding and prosecuting men who set forest fires.
- 9106** U. S. D. A. Forest Service. Division of Fire Control. AIR TANKER USE; A 5-YEAR APPRAISAL. Fire Contr. Notes [Washington] 29(4):6-7, 13. Fall 1968. 1 F766Fi  
More than 45 million gallons of water and fire-retarding chemical solutions has been dropped on forest fires by the Forest Service since its air tanker program was started about 12 years ago. A comparison of the National Forest protection area burned during this period with that of the previous 10 years shows a reduction of more than 20 percent. Certainly intensified prevention efforts and many improvements in equipment and techniques have contributed to this reduction. But it generally has been felt that air tankers have played an important role in effecting it.
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Burning and seeding for pasture.
- 9108** Davis, L. L., and Roberts, R. C. FIRE PROTECTION ON THE OUACHITA [NATIONAL FOREST, ARIZONA]. Fire Contr. Notes [Washington] 29(4):10-11. Fall 1968. 1 F766Fi
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- 9110** Breuer, E. H. REMOTE MEASUREMENT OF WET AND DRY BULB TEMPERATURES. Fire Contr. Notes [Washington] 29(4):14-15. Fall 1968. 1 F766Fi  
Thermistor to calculate forest fire danger.
- 9111** Jorgensen, R. N. STEAM BENDING OF HICKORY [CARYA]. Hickory Task Force. Rep. 11, 12 p. Ref. May 1968. A99.9 F7633  
At this time all evidence indicates that the hickory species are eminently satisfactory for producing bent-wood products after a plasticizing treatment with steam or hot water. Although inherent color, finishing characteristics, and other characteristics may make it desirable to select a particular wood, all eight of the species can be bent effectively by steaming.  
Care must be taken in seasoning the material before the bending process is started, because the hickories are dense hardwoods that are susceptible to the development drying defects. These defects will materially affect the bent-wood production. Because a considerable amount of hickory now available is low quality material, particular attention must be paid to the selection of the proper material to go into the bending process.
- 9112** Heede, B. H. ENGINEERING TECHNIQUES AND PRINCIPLES APPLIED TO SOIL EROSION CONTROL. U. S. Forest Serv. Res. Note RM-102, 7 p. 1968. A99.9 F7632Us
- 9113** McGee, C. E. NORTHERN RED OAK [QUERCUS RUBRA] SEEDLING GROWTH VARIES BY LIGHT INTENSITY AND SEED SOURCE. U. S. Forest Serv. Res. Note SE-90, 4 p. Mar. 1968. A99.9 F7623Un  
Northern red oak seedlings from each of three seed sources were subjected for one growing season to one of four intensities of light: full light, 70 percent light, 37 percent light, and 8 percent light. Seedlings grown in the open were taller than those grown in the shade and had more, generally heavier leaves. Height and leaf growth decreased as the amount of light reaching the plant decreased. Seed source, another important factor affecting growth, was related to height growth, number of leaves per seedling, acorn weight, and percent of multiple stems. Forty-one percent of the seedlings from one source had multiple stems, while only 11 percent and 4 percent of the seedlings from the other two sources had multiple stems.
- 9114** Schultz, R. P. SOIL OR FOLIAR FERTILIZATION OF WELL-DRAINED AND FLOODED SLASH PINE [PINUS ELLIOTTII ELLIOTTII] SEEDLINGS. U. S. Forest Serv. Res. Paper SE-32, 8 p. Apr. 1968. A99.9 F7623U  
Bibliography, p.8.  
One-year-old slash pine seedlings were grown for 9 months under two soil-moisture and four N + P fertilization treatments. Flooding increased seedling mortality and decreased growth. Foliar fertilized seedlings did not grow better than unfertilized seedlings either under well-drained or flooded conditions. Under well-drained conditions, seedlings receiving soil fertilization or foliar plus soil fertilization had more than double the dry-weight increment and one-quarter more height growth than unfertilized seedlings. Under flooded conditions, soil fertilization or foliar plus soil fertilization did not increase height growth but increased dry-weight increment by 40 to 50 percent over unfertilized seedlings.
- 9115** Blackmarr, W. H. SEASONAL AND DIURNAL VARIATION IN MOISTURE CONTENT OF SIX SPECIES OF POCOSIN SHRUBS. U. S. Forest Serv. Res. Paper SE-33, 11 p. Apr. 1968. A99.9 F7623U  
Indication of forest fire danger.  
Seasonal variation in the moisture content of six species of pocosin shrubs was observed over a 10-month period during 1965. The variation in the moisture content of the foliage and stems is compared with the average moisture content of the whole plant.  
Moisture contents of both stems and foliage reached their lowest levels during the fall and early spring. The moisture content of most species increased rapidly throughout May, reaching a maximum during the first 2 weeks of June. The initiation of new foliage occurred at about the same time that the average moisture content of the whole plant began its rapid spring buildup.  
Diurnal variation in the moisture content of the foliage of four shrub species was observed over a 36-hour period during June 21 and 22, 1965.  
The moisture content of newly developed foliage exhibited noticeable diurnal fluctuation. Maximum moisture contents occurred between 2 and 6 a.m. Minimum moisture contents occurred between 2 and 6 p.m.

8116 Taras, M. A., and Sancier, J. R. WOOD DENSITY SURVEYS OF THE MINOR SPECIES OF YELLOW PINE IN THE EASTERN UNITED STATES. I. SPRUCE PINE (*Pinus glabra* Walt.). U. S. Forest Serv. Res. Paper SE-34, 15 p. Apr. 1968. A99.9 F7623U Spruce pine (*Pinus glabra* Walt.) was sampled over its entire range at 35 different locations. Specific gravity was determined on increment cores in an extracted condition. Tree-increment core specific gravity relations were examined, and equations for predicting tree specific gravity developed. Geographic variation in the specific gravity of spruce pine is discussed.

8117 Bennett, F. A. MULTIPLE-PRODUCT YIELD ESTIMATES FOR UNTHINNED SLASH PINE PLANTATIONS; PULPWOOD, SAWTIMBER, GUM. U. S. Forest Serv. Res. Paper SE-35, 21 p. Apr. 1968. A99.9 F7623U

If the objective of forest management is to maximize cash returns, the forest manager must be able to determine the optimum density and rotation age; these determinations require techniques for predicting multiple-product yields for various age-site-density schedules. This paper presents multiple-product yield estimates for slash pine plantations that were obtained by constructing a family of frequency curves that define the relative proportion of trees in each diameter class as a function of age, site, and density. Included are estimates of board-foot, pulpwood, and gum yields, singly and in combination. Returns for single products and the various combinations of products are also included.

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**AGRICULTURAL PRODUCTS: PROCESSING,  
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**GENERAL**

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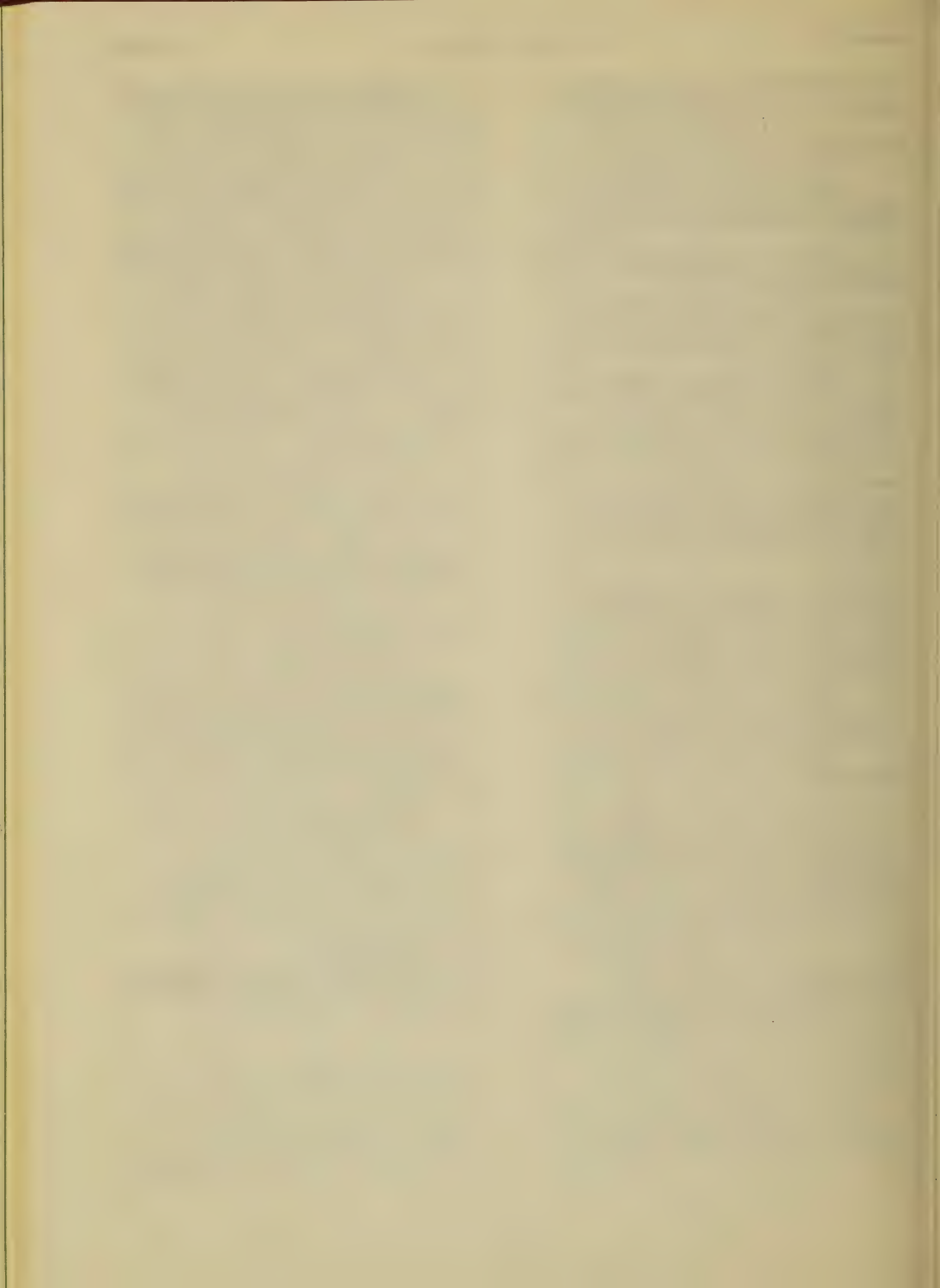
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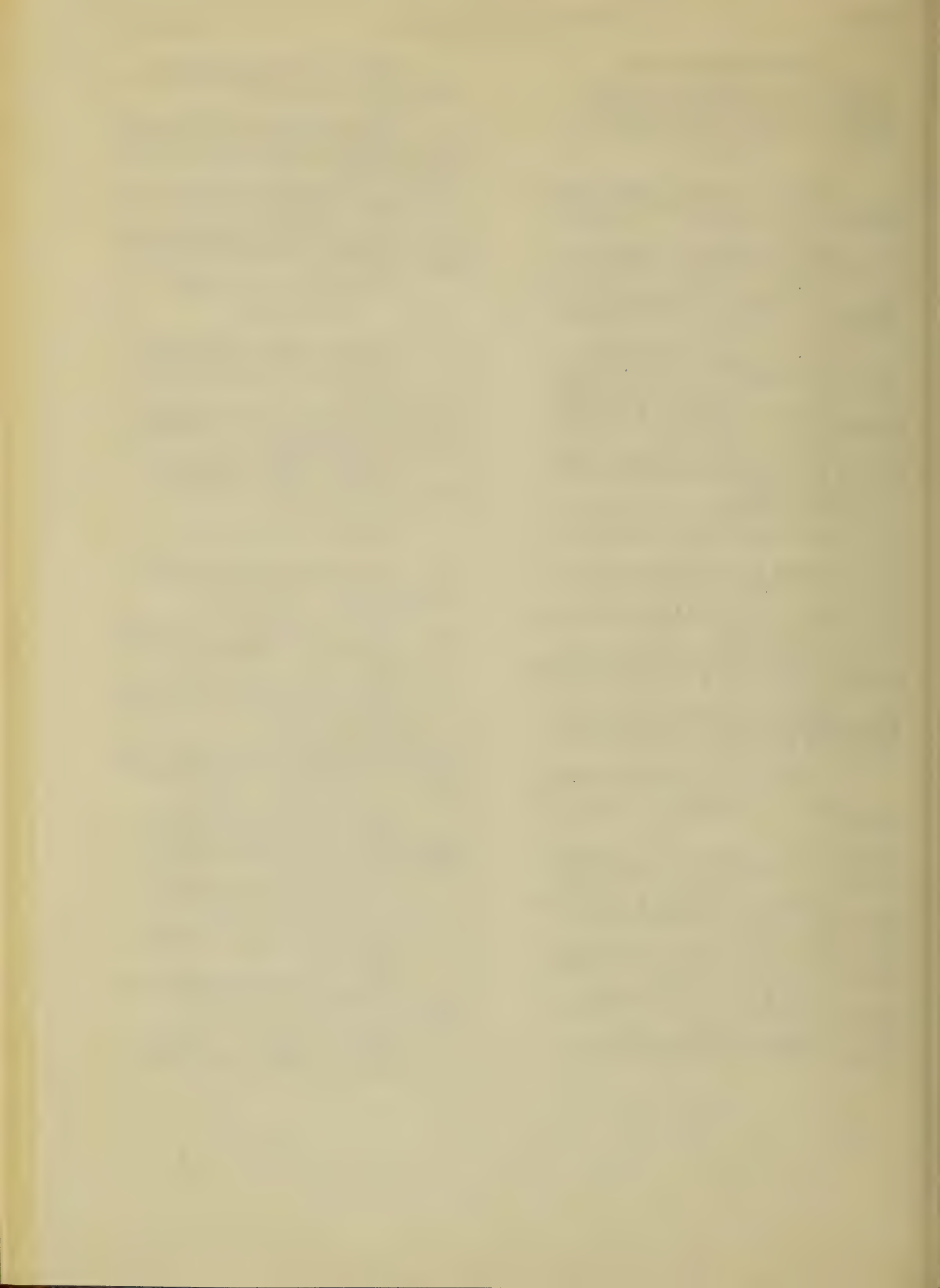
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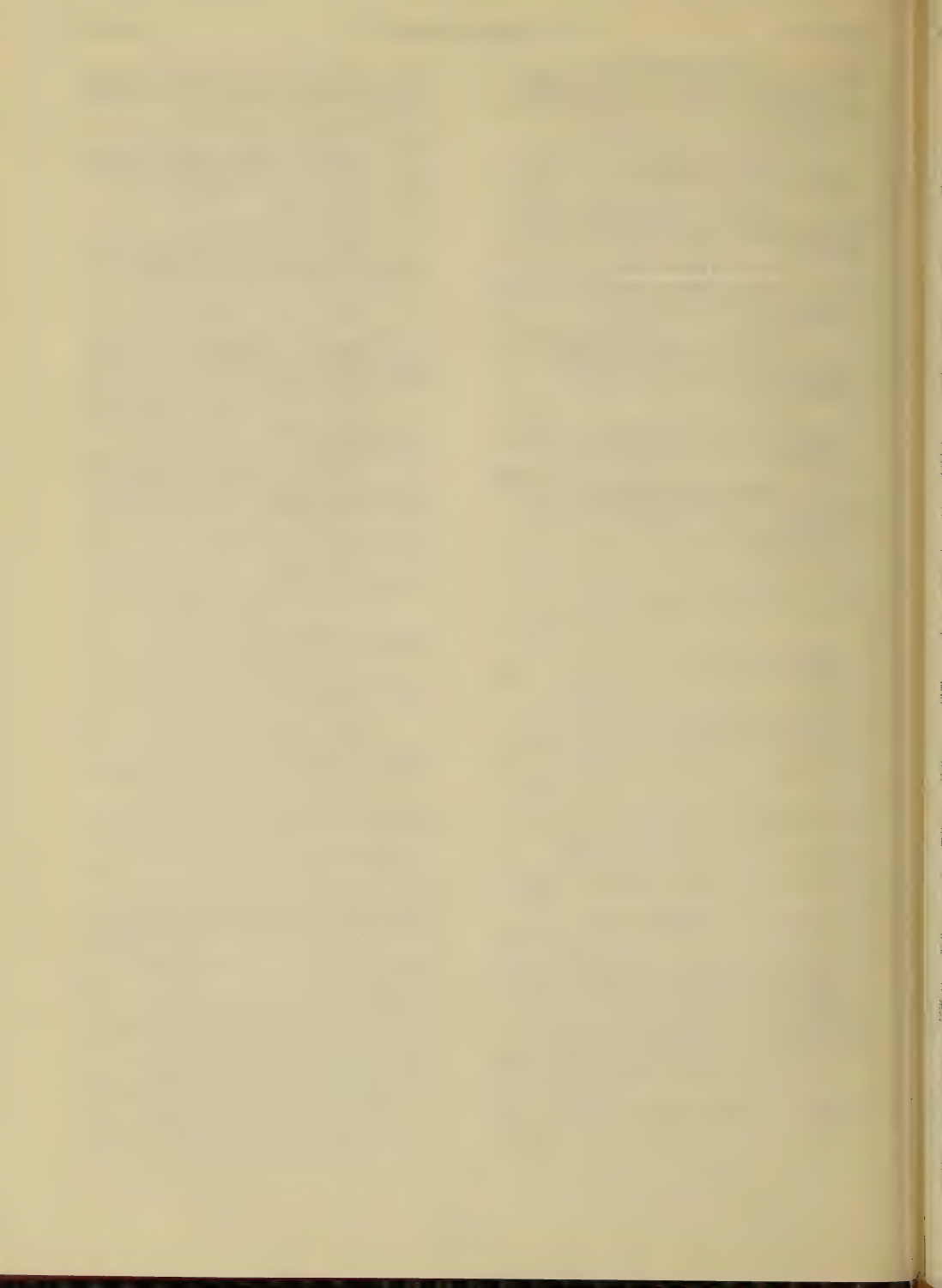
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No. 3

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## CHECKLISTS

Checklists of publications of the U. S. D. A., State Agricultural Experiment Stations, and State Agricultural Extension Services are prepared for the convenience of those who wish to follow the literature from these sources. All such publications are included also in the classified section and indexed in the author and subject indexes.

Abstracts are included with citations to U. S. D. A. publications, provided they are brief and are received with the original publication.

U. S. D. A. PUBLICATIONS

Publications in the various United States Department of Agriculture series are listed first, followed by publications issued by the various agencies within the Department, arranged alphabetically by name of agency.

Domestic requests for publications in the various Department series will be filled free to libraries and other qualified agencies and organizations upon application to the United States Department of Agriculture, Office of Information, Washington, D.C., 20250, as long as the supply lasts. They may also be purchased from the Superintendent of Documents, Washington, D.C., 20250.

Domestic requests for most publications issued by the Department will be filled free by the issuing agency, as long as the supply lasts. Requests should be addressed to the United States Department of Agriculture, name of the specific issuing agency, Washington, D.C., 20250.

Foreign governments, institutions and agencies which issue publications, may obtain United States Department of Agriculture publications in exchange by writing to the United States Department of Agriculture, National Agricultural Library, Exchange Unit, Washington, D.C., 20250.

For further information about the availability of United States Department of Agriculture publications, consult U.S.D.A. List Number 11, List of Available Publications of the United States Department of Agriculture, obtainable from the United States Department of Agriculture, Office of Information, Washington, D.C., 20250, and for sale by the Superintendent of Documents, Washington, D.C., 20402.

Agricultural Economic Reports

- 15336** Spiegelman, R. G. A STUDY OF INDUSTRY LOCATION USING MULTIPLE REGRESSION TECHNIQUES. U. S. D. A. Agr. Econ. Rep. 140, 66 p. Aug. 1968. 1 Ag84A  
Summary, p. I-II.

Agriculture Handbooks

- 15337** Lutz, J. M., and Hardenburg, R. E. THE COMMERCIAL STORAGE OF FRUITS, VEGETABLES, AND FLORIST AND NURSERY STOCKS. U. S. D. A. Agr. Handbook 66, rev., 94 p. Oct. 1968. 1 Ag84A

Bibliography, p. 72-94.

- 15338** U. S. D. A. Office of the General Counsel. COMPILATION OF STATUTES RELATING TO THE CONSUMER AND MARKETING SERVICE AND CLOSELY RELATED ACTIVITIES, AS OF JANUARY 15, 1968, COMPILED UNDER THE DIRECTION OF THE GENERAL COUNSEL. U. S. D. A. Agr. Handbook 350, 335 p. June 1968. 1 Ag84A

- 15339** U. S. D. A. Economic Research Service. HANDBOOK OF AGRICULTURAL CHARTS. 1968. U. S. D. A. Agr. Handbook 359, 148 p. Nov. 1968. 1 Ag84A

U. S. D. A. Statistical Reporting Service, U. S. D. A. Agricultural Research Service, and U. S. D. A. Foreign Agricultural Service, cooperating.

Agriculture Information Bulletins

- 15340** U. S. D. A. Agricultural Research Service. SCIENCE AND AMERICA'S BEAUTY. U. S. D. A. Agr. Inform. Bull. 323, slightly rev., 12 p. July 1968. 1 Ag84A

U. S. D. A. research applied to beautification.

- 15341** U. S. D. A. Agricultural Research Service. Animal Disease and Parasite Research Division. 22 PLANTS POISONOUS TO LIVESTOCK IN THE WESTERN STATES. U. S. D. A. Agr. Inform. Bull. 327, 64 p. Apr. 1968. 1 Ag84A

Farmers' Bulletins

- 15342** Shear, G. M. COMMERCIAL GROWING OF WATERCRESS. U. S. D. A. Farmers' Bull. 2233, 11 p. Aug. 1968. 1 Ag84F

Home and Garden Bulletins

- 15343** U. S. D. A. Agricultural Research Service. HOW TO TAILOR A WOMAN'S SUIT. U. S. D. A. Home Gard. Bull. 20, slightly rev., 23 p. Sept. 1968. 1 Ag84Hg

- 15344** U. S. D. A. Agricultural Research Service. HOW TO PREVENT AND REMOVE MILDEW; HOME METHODS. U. S. D. A. Home Gard. Bull. 68, slightly rev., 14 p. July 1968. 1 Ag84Hg

- 15345** U. S. D. A. Agricultural Research Service. Crops Research Division. GROWING PANSIES. U. S. D. A. Home Gard. Bull. 149, 7 p. Aug. 1968. 1 Ag84H

Pansies are among the most popular garden flowers today. They exhibit a wide range of colors, markings, and sizes.

Although pansies are hardy biennials, they are also grown as annuals. The ideal temperature range for growing pansies is from about 40° F. at night to 60° F. during the day. They will grow in all parts of the United States. They produce their best flowers in the spring when the weather is mild, then fade and are usually discarded when really hot weather arrives. In areas where long periods without frost are common, strong pansy plants will bloom in the fall and even in the winter.

- 15346** U. S. D. A. Agricultural Research Service. Human Nutrition Research Division. CEREALS AND PASTA IN FAMILY MEALS; A GUIDE FOR CONSUMERS. U. S. D. A. Home Gard. Bull. 150, 32 p. Oct. 1968. 1 Ag84Hg  
Includes recipes.

- 15347** U. S. D. A. Agricultural Research Service. Crops Research Division. SUMMER FLOWERING BULBS. U. S. D. A. Home Gard. Bull. 151, 16 p. Aug. 1968. 1 Ag84Hg  
Culture.

- 15348** U. S. D. A. Agricultural Research Service. Crops Research Division. GROWING GARDENIAS. U. S. D. A. Home Gard. Bull. 152, 7 p. Sept. 1968. 1 Ag84Hg

Home Economics Research Reports

- 15349** Jones, A. H., and Mork, L. F. HELPING FAMILIES MANAGE THEIR FINANCES. U. S. D. A. Home Econ. Res. Rep. 21, rev., 51 p. June 1968. A321.9 Ag8

Leaflets

- 15350** Hodgson, J. M. CANADA THISTLE [CIRSIMUM ARVENSE] AND ITS CONTROL. U. S. D. A. Leaflet. 523, rev., 7 p. Sept. 1968. 1 Ag84L

Marketing Research Reports

- 15351** Lipton, W. J. MARKET QUALITY OF ASPARAGUS: EFFECTS OF MATURITY AT HARVEST AND OF HIGH CARBON DIOXIDE ATMOSPHERES DURING SIMULATED TRANSIT. U. S. D. A. Marketing Res. Rep. 817, 7 p. Aug. 1968. 1 Ag84Mr

Exposing harvested asparagus spears to controlled atmospheres containing 20 percent carbon dioxide (CO<sub>2</sub>) for 24 hours effectively reduced the incidence of bacterial soft rot at the butt end during subsequent holding of the spears in air (normal atmosphere) for about 1 week at 36°, 41°, or 50°F. An initially high (20 percent) but gradually decreasing concentration of CO<sub>2</sub> reduced soft rot at the butt end of spears in a simulated air transit test of 4 days at 59°. Neither treatment, however, was effective in reducing soft rot at the tips.

Bacterial soft rot at the tips of spears was significantly lower in less mature tight tips than in more mature loose or feathered tips. Culling spears with loose tips before shipment would reduce market losses in this crop.

- 15352 Berberich, R. S. COORDINATED MARKETING PROGRAMS OF SELECTED FRUIT AND VEG-  
ETABLE COOPERATIVES. U. S. D. A. Marketing Res.  
Rep. 826,34 p. Sept. 1968. 1 Ag84Mr  
Summary, p. III-IV.

#### Miscellaneous Publications

- 15353 U. S. D. A. Economic Research Service. Mar-  
keting Economics Division. MARKETING  
SPREADS FOR WHITE BREAD. U. S. D. A. Misc. Publ.  
1091,15 p. July 1968. 1 Ag84M
- 15354 U. S. D. A. Agricultural Research Service.  
BRACED WALL SILO: COOPERATIVE FARM  
BUILDING PLAN NO. 6021. U. S. D. A. Misc. Publ. 1097,  
2 p. Oct. 1968. 1 Ag84M
- 15355 U. S. D. A. Agricultural Research Service.  
LOADING RAMP FOR CATTLE: COOPERA-  
TIVE FARM BUILDING PLAN NO. 5960. U. S. D. A.  
Misc. Publ. 1106,2 p. Nov. 1968. 1 Ag84M

#### Program Aid

- 15356 U. S. D. A. Consumer and Marketing Service.  
C&MS; THIS IS USDA'S CONSUMER & MAR-  
KETING SERVICE. U. S. D. A. PA-661,rev.,30 p. Aug.  
1968. 1 Ag84Pro

#### AGRICULTURAL RESEARCH SERVICE

- 15357 U. S. D. A. Agricultural Research Service. Soil  
and Water Conservation Research Division.  
WALNUT GULCH EXPERIMENTAL WATERSHED. Wash-  
ington, 1967. 28 p.,map. aTC425.W32A5  
U. S. D. A. Soil Conservation Service, and the  
Arizona University, cooperating.  
The basic information collected in the various  
phases of the work of the Southwest Watershed Research  
Center will contribute to a more comprehensive under-  
standing of the many interacting factors affecting land  
use, sediment production and movement, and water yield,  
and to an intelligent synthesis of these factors as they  
affect the use of vast areas of semiarid rangeland in the  
Southwestern United States.

- 15358 Hutchison, R. S. FAN VENTILATION OF AIR  
SPACE ABOVE GRAIN IN FLAT STORAGE.  
U. S. Agr. Res. Serv. ARS-52-(n.s.),27,17 p. May 1968.  
A289.9 R31

Summary, p.3.

- 15359 Nicholas, C. J. TRANSPORTING PACKAGED  
FROZEN POULTRY TO EUROPEAN MAR-  
KETS IN VAN CONTAINERS AND BREAK-BULK SHIP-  
MENTS; AN INTERIM REPORT. U. S. Agr. Res. Serv.  
ARS-52-(n.s.),28,23 p. July 1968. A289.9 R31  
Summary, p.1-2.

- 15360 Brasington, C. F., Hammons, D. R., and Webb,  
T. F. PROCEDURES FOR HANDLING BY-  
PRODUCTS REMOVED DURING BEEF BONING. U. S.  
Agr. Res. Serv. ARS-52-(n.s.) 29,14 p. May 1968.  
A289.9 R31

Oklahoma Agricultural Experiment Station,  
cooperating.

Conclusion, p.14.

- 15361 Britton, V. PURCHASES OF VARIOUS TYPES  
OF CLOTHING FOR MEN, WOMEN, AND  
CHILDREN. U. S. Agr. Res. Serv. ARS-62-5-5-11. Sept.  
1968. A321.9 R31

Family expenditures.

- 15362 Steele, P. FOOD EXPENDITURES IN THE  
SOUTH. U. S. Agr. Res. Serv. ARS-62-5-3-5.  
Dec. 1968. A321.9 R31  
Households in the South spend less for food  
than those in other regions, according to a nationwide  
food consumption survey conducted by the U.S. Depart-  
ment of Agriculture. The value of food used at home dur-  
ing a week in the spring of 1965 averaged \$25.98 in the  
South—\$3 less than in the North Central and Western Re-  
gions and \$6 less than in Northeast (table 1). Of the  
South's \$25.98 total, \$23.39 was spent for purchased food  
and \$2.59 was the value of food produced at home or  
received as gift or pay.

- 15363 Forziati, F. H. CHANGES IN BODY SIZE OF  
YOUNG WOMEN SINCE 1940. U. S. Agr. Res.  
Serv. ARS-62-5-6-7. Dec. 1968. A321.9 R31  
Data for clothing industry.

- 15364 Britton, V. USE OF MANMADE TEXTILE  
FIBERS INCREASING. U. S. Agr. Res. Serv.  
ARS-62-5-8-11. Dec. 1968. A321.9 R31  
About 45 percent of the textile fiber used in  
the United States in 1967 was manmade (29 percent non-  
cellulosics such as nylon, polyester, acrylic, and olefin  
and 16 percent rayon and acetate), compared with 10 per-  
cent in 1940 (table 1). Use of the natural fibers has de-  
clined sharply—cotton from 81 percent of the total in 1940  
to 50 percent in 1967, and wool from 9 to 5 percent.

- 15365 Britton, V. TEXTILE FIBERS IN CLOTHING  
AND HOME FURNISHINGS. U. S. Agr. Res.  
Serv. ARS-62-5-11-13. Dec. 1968. A321.9 R31  
U.S. manufacturers used over 7 billion pounds  
of the major textile fibers—cotton, wool, and manmade—  
in goods for the Nation's consumers in 1966. Of this total,  
26 percent was used in men's and boys' wear; 24 percent  
in women's, misses', children's, and infants' wear; 36  
percent in home furnishings; and 14 percent in other con-  
sumer products. About 51 percent of the raw fiber was  
cotton, 7 percent wool, and 42 percent manmade. The re-  
lative importance of these fibers in the textile products  
made for consumers varied from item to item.

- 15366 Wolgamot, I. HOME ECONOMISTS CONTRI-  
BUTE TO RURAL DEVELOPMENT. U. S.  
Agr. Res. Serv. ARS-62-5-13-15. Dec. 1968. A321.9 R31  
Teaching.

- 15367 Dowler, W. M., Jones, R. K., and Ferree, R. J.  
STEM PITTING OF PEACH IN SOUTH CARO-  
LINA. Plant Dis. Rep. 52(12):907. Dec. 1968. 1.9 P69P  
Stem pitting of peach was found in South Caro-  
lina in May 1968. Belowground symptoms of pitting and  
woody tissue disorganization were associated with yellow-  
ish foliage and purple spotting of leaves. The disease  
is known to exist in South Carolina in only one orchard of  
8-year-old "Coronite" peach trees.

- 15368 Staley, J. M., Altman, J., and Spotts, R. A. A  
SODIUM-LINKED DISEASE OF PONDEROSA  
PINE [PINUS PONDEROSA] IN DENVER, COLORADO.  
Plant Dis. Rep. 52(12):908-910. Dec. 1968. 1.9 P69P  
A chronic foliar chlorosis and tipburn of ponderosa  
and other pines in Denver, Colorado is described.  
Needles of affected trees exhibit tipburn, initiated by a  
band of resin infiltration followed by chlorosis and eventual  
necrosis. Examinations and cultural treatments over a  
10-year period have implicated no causal agents. More  
recent analyses show diseased foliage contains abnormal-  
ly high levels of sodium.

- 15369 Al-Shukri, M. M. INTERACTION BETWEEN  
FUSARIUM OXYSPORUM F. VASINFECTUM  
AND VERTICILLIUM DAHLIAE ON GOSSYPIUM HIRSUTUM,  
VARIETY SKALLERIDIS. Plant Dis. Rep. 52(12):  
910-913. Dec. 1968. 1.9 P69P

The results showed that both *Fusarium oxysporum* f. *vasinfectum* and *Verticillium dahliae* grew in vitro without any sign of antagonism. Also, the combined effects of both fungi on cotton plants increased the severity of wilt and greatly decreased the incubation period.

When both *Fusarium oxysporum* f. *vasinfectum* and *Verticillium dahliae* were present on the root system of a susceptible plant, the former species germinated quickly, penetrated the root rapidly, and grew faster in the host tissue than did the latter species.

- 15370 Culp, T. W., and Troutman, J. L. VARIETAL  
REACTION OF PEANUTS, ARACHIS HYPO-  
GAEA, TO STUNT VIRUS DISEASE. Plant Dis. Rep. 52  
(12):914-918. Dec. 1968. 1.9 P69P  
Several hundred peanut (*Arachis hypogaea*) va-  
rieties, introductions, and breeding lines were rated for  
plant reaction to natural infection of peanut stunt virus  
(PSV) under field conditions in Virginia in 1966 and 1967.  
None was immune, but several showed less severe symp-  
toms than others. Breeding line F393-7-1 exhibited the  
least PSV damage in several tests and gave varying re-  
actions under different levels of virus infection. More  
exact tests will be required to determine whether the  
entries showing the least PSV damage can be useful in  
controlling this disease in peanuts.

15371 McKinney, H. H. FURTHER STUDY OF THE LATENT STRAIN OF THE TOBACCO MOSAIC VIRUS. Plant Dis. Rep. 52(12):919-922. Dec. 1968. 1.9 P69P

In *Nicotiana sylvestris* infected with common TMV, virus of the latent strain failed to induce local lesions when challenge-inoculated on the mosaic leaves.

In pungent pepper, virus of the latent strain reduced the number of local lesions when the infected leaves were challenge-inoculated with common TMV or with a yellowing mutant of TMV. In "Samsun" tobacco, the virus delayed or prevented progress of the challenging strains, depending on the age of the leaf receiving the challenging inoculation, and on whether this leaf was the one previously inoculated with the virus of the latent strain (or one above it that contained the virus by the systemic route).

The virus of the latent strain could not be detected in the very young leaves of infected Samsun tobacco plants.

Serological tests made by the Ouchterlony gel-diffusion method showed the latent strain to be related to, but not identical with, common TMV, and not to be contaminated with common TMV. The ultraviolet spectral curve for purified virus of the latent strain was found to be typical for TMV strains, and it indicated that the latent strain is less concentrated in the tobacco plant than is common TMV. The virions of the latent strain are straight rods, resembling closely those of common TMV.

15372 Ullstrup, A. J., and Britton, M. P. AN UNUSUAL EPIDEMIOLOGIC OF COMMON CORN SMUT IN INDIANA AND ILLINOIS. Plant Dis. Rep. 52(12):922-923. Dec. 1968. 1.9 P69P

Seed disease associated with *Ustilago zaeae*.

15373 Kaloustian, G. H., and Jones, L. S. PEAR LEAF CURL VIRUS TRANSMITTED BY PEAR PSYLLA. Plant Dis. Rep. 52(12):924-925. Dec. 1968. 1.9 P69P

Pear psylla, *Psylla pyricola* Foerster, collected from trees infected with the pear decline virus transmitted pear leaf curl virus to test trees on domestic French rootstock and pear decline virus to test trees on Oriental rootstock. Also, the viruses were transmitted by graft from infected trees to healthy trees.

15374 Choopanya, D. DISTRIBUTION OF PEANUT STUNT VIRUS IN WHITE CLOVER IN SOUTH CAROLINA AND ITS RELATIONSHIP TO PEANUT CULTURE. Plant Dis. Rep. 52(12):926-928, map. Dec. 1968. 1.9 P69P

Peanut stunt virus (PSV) was found in white clover throughout most of South Carolina in 1967. Symptoms and serological tests were used for identification. The virus was also found during the fall, winter, and spring, which proves that white clover is an overwintering host. Peanut fields in the State were PSV-free, as demonstrated by the absence of typical symptoms and negative serological tests from suspected plants. Differences in soil and moisture requirements of peanuts and white clover are believed to be responsible for the failure of PSV to be transmitted from white clover to peanut fields in South Carolina.

15375 Nagai, H., and Smith, P. G. REACTION OF PEPPER VARIETIES TO NATURALLY OCCURRING VIRUSES IN CALIFORNIA. Plant Dis. Rep. 52(12):928-930. Dec. 1968. 1.9 P69P

Differential hosts and chloroplast agglutination tests were used to identify viruses isolated from commercial pepper plantings in California. Potato virus Y and tobacco etch virus were found to be the principal cause of pepper mosaic diseases. Tobacco mosaic virus, potato virus X, and cucumber mosaic virus were not isolated during the study.

In the common pepper, *Capsicum annum*, PI 264281 (P11), Agronomico 8, and Ac. 2120, no symptoms were found after mechanical inoculation with TEV and PVY isolates, while Yolo Y and the Brazilian varieties Avelar and Casca Dura were resistant to some of the virus isolates.

At least two additional unidentified viruses collected from pepper plants were infective to all pepper varieties used in these tests.

15376 Jones, J. P. SURVIVAL OF CERCOSPORA KIKUCHII ON SOYBEAN STEMS IN THE FIELD. Plant Dis. Rep. 52(12):931-934. Dec. 1968. 1.9 P69P

The fungus *Cercospora kikuchii* was found to overwinter on infected soybean debris collected from a number of fields in the Yazoo-Mississippi delta area. When infected stems were placed on and under two types of soil in an overwintering field test, the fungus on the buried stems ceased within 2 months to sporulate, although it continued to do so abundantly on buried stems. Plowing under of soybean debris after harvest would eliminate this source of spring inoculum.

15377 Allen, R. M. SURVIVAL TIME OF EXOCORTIS VIRUS OF CITRUS ON CONTAMINATED KNIFE BLADES. Plant Dis. Rep. 52(12):935-939. Dec. 1968. 1.9 P69P

Exocortis virus survived 8 days on steel knife blades. Infectivity of the virus was not affected over a wide range of time intervals between knife contamination and transfer to citron or by two sequential transfers by this method. Spread of the virus to susceptible hosts by contaminated tools was accomplished from all citrus species of commercial importance tried, including lemon, sweet orange, grapefruit, tangerine, and a trifoliolate hybrid. Time requirements for disease expression by citron scions are believed to be directly related to inherent vigor of rootstocks, environmental temperature, and cultural practices.

15378 Chi, C. C. NUTRITION STRESS IN RELATION TO FUSARIUM [OXYSPORIUM AND F. SOLANI] WILT AND ROOT ROT OF ALFALFA. Plant Dis. Rep. 52(12):939-943. Dec. 1968. 1.9 P69P

Host nutrition was shown to be an important factor in the development of Fusarium wilt and root rot in alfalfa. In general, disease incidence was highest at low levels of N, P, K, or Ca and declined with increasing concentrations of each element. Vigor of plants had a profound influence on the degree of disease development; optimal concentrations of the four elements produced vigorous plants and reduced disease. Osmotic pressure of the nutrient solution consistently influenced plant growth and disease development. High osmotic pressure in an otherwise balanced nutrient solution retarded plant growth and reduced disease incidence.

15379 Rawlins, T. E., and Booth, J. A. TWEEEN 20 AS AN ADJUVANT FOR SYSTEMIC SOIL FUNGICIDES FOR VERTICILLIUM [ALBO-ATRIUM] IN COTTON. Plant Dis. Rep. 52(12):944-947. Dec. 1968. 1.9 P69P

Obbero, F. P., Trujillo, E. E., and Aragaki, M. PHOMA [DESTRUCTIVA] LEAF SPOT OF TOMATO AND POTATO IN HAWAII. Plant Dis. Rep. 52(12):946-947. Dec. 1968. 1.9 P69P

15381 Cole, J. R. DIEBACK AFFECTING PECAN TREES IN SOUTHWEST GEORGIA AND NORTH FLORIDA. Plant Dis. Rep. 52(12):947-949. Dec. 1968. 1.9 P69P

Caused by *Botryosphaeria berengeriana*.

15382 Gil, D. L. MIMOSA WILT FUSARIUM CAUSED IN SEED. Plant Dis. Rep. 52(12):949-951. Ref. Dec. 1968. 1.9 P69P

Fusarium oxysporum f. sp. perniciosis was obtained from seeds of a wilted mimosa (*Albizia julibrissin*) tree and from seedlings grown from these seeds. Healthy seedlings inoculated with isolates from seed and seedlings became infected. This shows another method of spread of mimosa wilt.

15383 Klotz, L. J., and others. SOME FACTORS IN RESISTANCE OF CITRUS TO PHYTOPHTHORA [CITROPHTHORA AND P. PARASITICA] SPP. Plant Dis. Rep. 52(12):952-955. Dec. 1968. 1.9 P69P

W. P. Bitters, T. A. DeWolfe, and M. J. Garber, joint authors.

Citrus rootstocks, such as trifoliolate orange varieties and their hybrids (citranges and citremons), Citrus taianica, and siamelo, in soils heavily infested by *Phytophthora* spp. did not develop gummosis of the crown or trunk. These same rootstocks can be infected by placing the fungi directly on the cambium. Thus the importance of avoiding cultivation injuries and overwatering of trees is stressed. Alteration of resistance or susceptibility of lemon or orange scions by rootstocks to *Phytophthora* infections is variable and not necessarily related to resistance or susceptibility of the rootstocks.



15394 Griffin, G. D., and Stoker, G. L. SUSCEPTIBILITY OF EIGHTEEN POTATO VARIETIES TO MELOIDOGYNE HAPLA. Plant Dis. Rep. 52(12):956-957. Ref. Dec. 1968. 1.9 P69P

15395 Cantwell, A. M. EFFECT OF TEMPERATURE ON RESPONSE OF PLANTS TO OZONE AS CONDUCTED IN A SPECIALLY DESIGNED PLANT FUMIGATION CHAMBER. Plant Dis. Rep. 52(12):957-960. Dec. 1968. 1.9 P69P

Tests conducted in an environmental growth chamber, which was modified for air pollution studies, indicate "Bel W3" cigar wrapper tobacco shows an inverse relation between sensitivity to the phytotoxicant ozone and temperature. Such a result is suggested as an explanation for the higher incidence of ozone damage to crops in Delaware during the spring and fall although the peak ozone levels occur during the summer.

15396 Reynolds, G., and Lock, W. PLASTIC FILM. TUBE CLOSURES IN THE CONSERVATION OF FUNGAL CULTURES. Plant Dis. Rep. 52(12):961-962. Dec. 1968. 1.9 P69P

*Fusarium oxysporum* and *Poria weirii*.

15397 Chauhan, L. S., Verma, S. C., and Bajpai, G. K. ASSESSMENT OF LOSSES DUE TO STEM ROT OF RICE CAUSED BY SCLEROTIUM ORYZAE. Plant Dis. Rep. 52(12):963-965. Dec. 1968. 1.9 P69P

India.

15398 Simpson, W. R. SUGARBEET VIRUS COMPLEX IN SOUTHWESTERN IDAHO. Plant Dis. Rep. 52(12):965-966. Dec. 1968. 1.9 P69P

15399 Hildebrand, E. M. RUSSET CRACK: A MENACE TO THE SWEETPOTATO INDUSTRY. II. NATURAL TRANSMISSION. Plant Dis. Rep. 52(12):967-971. Dec. 1968. 1.9 P69P

There was efficient natural transmission of russet crack virus in sweetpotato under exposed conditions in the field. It made little difference whether the virus was alone or in mixture with yellow dwarf virus or with the cork virus syndrome. Russet crack is a menace to the sweetpotato industry because the amount of natural transmission ranged as high as 75% in one growing season.

Greenhouse studies demonstrated that the abutilon whitefly (*Trialeurodes abutilonea*), the insect vector of sweetpotato yellow dwarf, did not transmit russet crack. The green peach aphid (*Myzus persicae*), a consistent vector of the cork syndrome indoors and outside, was likewise ineffective when the "short" or nonpersistent method of virus transmission was used.

During 1966 the field planting arrangement, of 1 diseased to 9 or more healthy, favored the "long" or persistent method of virus transmission by aphids. These observations provide evidence to implicate this insect by empirical means.

15390 Demski, J. W., and Boyle, J. S. SPREAD OF NECROTIC RINGSPOT VIRUS IN A SOUR CHERRY ORCHARD. Plant Dis. Rep. 52(12):972-974. Dec. 1968. 1.9 P69P

Pennsylvania.

The annual increase and spread of necrotic ringspot virus in a sour cherry orchard at University Park was recorded. Although virus spread did not appear to follow a pattern, the majority of "new infections" were located next to a previously infected tree. The greatest yearly increase in disease incidence occurred in the tenth year, after infection had reached about 25%. By the twelfth year, over 91% of the trees in the orchard were infected.

15391 Beraha, L. GRAY MOLD OF GREEN ONIONS ON THE MARKET. Plant Dis. Rep. 52(12):974-975. Dec. 1968. 1.9 P69P

Caused by *Botrytis allii* during transport.

15392 Evans, G. INFECTION OF XANTHIUM PUNGENS BY SEEDBORNE VERTICILLIUM DAHLIAE. Plant Dis. Rep. 52(12):976-978. Dec. 1968. 1.9 P69P

Australia.

The pericarp and pseudocarp of *Xanthium pungens* (Noogoora burr) were found to be infected by *Verticillium dahliae*. The level of infection varied from 0% to 75%, but averaged about 40% in burrs from most plants. Abundant microsclerotia were observed and identified at the base of the pericarp and pseudocarp and occasionally in the testa near the point of attachment to the parent plant.

It was shown by experiment in a field soil that seedlings of *X. pungens* are infected by seedborne *V. dahliae* as the radicle emerges from the base of the pseudocarp. Moreover, the fungus may infect the cotyledons of plants growing from infected seed.

The importance of infected seed in dissemination of *V. dahliae* is discussed.

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In a comparison of numbers of applications of tetrachloroisophthalonitrile for downy mildew control, one to six applications at weekly intervals were made to watermelons. There were no significant differences in disease control in plants sprayed prior to symptom appearing regardless of the number of applications. Disease development was considerably slower on these plants than on those first sprayed after symptom appearance. Spores were not trapped prior to the onset of downy mildew symptoms. Therefore, spore trap data were of no value in timing spray schedules for disease control. Implications with respect to the usefulness of spore traps in timing fungicide applications are discussed.

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The recent drought in Senegal has cut prospects for the 1968-69 cotton crop considerably. However, Senegal's program to expand its cotton industry has progressed enough in recent years so that one slow year need not keep the country from reaching its stated goal: self-sufficiency in cotton fiber and cloth by 1973.



- 15466 Durusoy, Y. Z. TURKEY PROMOTES CONSUMPTION OF FILBERTS. Foreign Agr. 6(46):7-8. Nov. 11, 1968. A281.9 F76Fo

Of Turkey's agricultural export crops—which are its main source of foreign exchange—filberts are the third most valuable, ranking below only cotton and tobacco. Turkey is the world's leading filbert supplier; it grows more than 80 percent of the world's total, and 85 percent of this production is exported.

In the past 15 years total world production of filberts (also called hazelnuts) has risen by two-thirds; consumption has not increased at the same rate. The resulting increase in Turkish filbert stocks in recent years has led the country's policy makers to take measures to increase world consumption. Unless such measures are successful, Turkey and other major producing countries will have to limit production.

- 15467 Lege, F. M. NEW AUSTRALIAN WHEAT PROGRAM. Foreign Agr. 6(47):4. Nov. 18, 1968. A281.9 F76Fo

As introduced to Parliament in the form of legislation, Australia's new Wheat Industry Stabilization Scheme contains some provisions not present when it was put to farmers for approval in mid-September. These provisions, of an administrative nature, nevertheless could have substantial effect on export marketing policies.

- 15468 Persi, A. R. CANADA ACTS ON EGGS, DAIRY ITEMS. Foreign Agr. 6(47):4. Nov. 18, 1968. A281.9 F76Fo

Canada recently announced a deficiency payment for eggs marketed in the 1967–68 support year and a plan to use more milk in the manufacture of butter and less in cheese.

- 15469 Hume, D. L. U.K. GRAIN PRODUCTION LOWER. Foreign Agr. 6(47):4. Nov. 18, 1968. A281.9 F76Fo

Grain production in the United Kingdom this year is forecast at over a million tons below 1967 output, primarily because of reduced yields per acre and difficult harvest conditions. With the harvest now over, the crop is put at 13.36 million long tons against 14.40 million last year.

- 15470 Trick, A. W. SWISS SEEK ADDITIONAL RECIPIENTS OF SURPLUS MILK. Foreign Agr. 6(47):6. Nov. 18, 1968. A281.9 F76Fo

In Switzerland surplus milk and milk products are being siphoned from the country by a new coordinated approach. A new central charity organization named "Dairy Products for Nedy Areas" was formed a few months ago to cooperate with several government agencies and the Union of Swiss Milk Producers. At the same time, the Federal Council of the Ministry of Agriculture, the supply and distribution agency that sets producer prices for milk and other agricultural commodities, earmarked US\$4.1 million for the purchase of dairy products for overseas donation. (In 1967, only \$580,000 was allocated).

- 15471 Cohen, M. H. NORDIC COUNCIL ACCELERATES AGRICULTURAL COOPERATION IN SCANDINAVIA. Foreign Agr. 6(47):7-8. Nov. 18, 1968. A281.9 F76Fo

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- 15472 Ehman, F. W. YUGOSLAV ALFALFA SUPPLIES NEEDED LIVESTOCK FEED. Foreign Agr. 6(47):8. Nov. 18, 1968. A281.9 F76Fo

Industry.

- 15473 Shelden, G. W. THE CASAMANCE GOAL; MORE RICE FOR SENEGAL. Foreign Agr. 6(47):9. Nov. 18, 1968. A281.9 F76Fo

Senegal's drive toward self-sufficiency in foodgrains is largely dependent on production gains in a single crop, rice, and it in turn on development projects in the Casamance.

- 15474 Schertz, L. P. THE ROLE OF FARM MECHANIZATION IN THE DEVELOPING COUNTRIES. Foreign Agr. 6(48):2-4. Nov. 25, 1968. A281.9 F76Fo

Chiefly harvesting and handling of grain.

- 15475 Johnson, L. E. PAST AND PROSPECTS: U.S. TALLOW AND GREASE IN THE EXPORT MARKET. Foreign Agr. 6(48):5-6. Nov. 25, 1968. A281.9 F76Fo

Foreign trade in U.S. tallow and grease has taken giant steps forward since the early 1950's, largely as a result of intensive market development efforts. To-day that trade has more than doubled to almost one-half of our production. Sales peaked at 2.4 billion pounds in 1964, last year totaled 2 billion, and consistently account for about two-thirds of total world trade. As important as the sheer volume of this trade is its profitability. The bulk of shipments are sold for dollars through commercial transactions, which marks a favorable contribution to the U.S. balance of payments.

- 15476 Ferree, P. J. LIBYA: PROFILE OF A PROMISING FARM MARKET. Foreign Agr. 6(48):7-9. Nov. 25, 1968. A281.9 F76Fo

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## FOREST SERVICE

- 15477 Mielke, J. L., Krebill, R. G., and Powers, H. R. COMANDRA BLISTER RUST OF HARD PINES. U. S. Forest Serv. Forest Pest Leaflet. 62, rev., 8 p. Aug. 1968. A423.9 F764

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- 15478 Bedard, W. D. THE SUGAR PINE [PINUS LAMBERTIANA] CONE BEETLE. U. S. Forest Serv. Forest Pest Leaflet. 112, 6 p., map. July 1968. A423.9 F764

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- 15479 Rothacher, J., Dyrness, C. T., and Fredriksen, R. L. HYDROLOGIC AND RELATED CHARACTERISTICS OF THREE SMALL WATERSHEDS IN THE OREGON CASCADES. Washington, 1967. 54 p., map. Ref. aSD427.W3R6

Management.  
Summary, p. 35.

- 15490 U. S. D. A. Forest Service. Pacific Northwest Forest and Range Experiment Station. AN AIR PYCNOMETER FOR FOREST AND RANGE SOILS, BY D. D. WOOLDRIDGE. Portland, Oregon, 1968. 11 p. aTA710.W6

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## PLANT AND OPERATIONS, OFFICE OF

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## SOIL CONSERVATION SERVICE

- 15492 Booher, A. K. RECREATION STRIKES A SPARK IN LAND OF HULL AND YORK. Soil Conserv. 34(3):51-53. Oct. 1968. 1.6 So3S

Cordell Hull and Alvin C. York would be proud of the local people, rural and urban, who have united with single purpose to develop the resources of the rugged mountain country where they grew up. Recreation proved to be the needed catalyst for the Hull-York Lake and Resource Conservation and Development Project established in Tennessee's Upper Cumberland in 1965. Recreation facilities at Dale Hollow Lake are among the attractions now bringing a flood of visitors to the area.

- 15483 Young, J. W., and Thompson, M. E. A CITY PARK FOR THE ENTIRE COUNTY. Soil Conserv. 34(3):54-55. Oct.1968. 1.6 So3S  
A city recreation area in Cortland, N. Y. came into being in response to a locally recognized need for swimming facilities to serve all of Cortland County. The town of Cortlandville, the city of Cortland, and the county of Cortland joined to meet this need through action of the South Central New York Resource Conservation and Development Project.
- 15484 Taylor, H. PHEASANT HUNTING 30 MINUTES FROM SAN FRANCISCO. Soil Conserv. 34(3):56. Oct.1968. 1.6 So3S  
Recreational use of land to supplement farmer income.
- 15485 Smith, L. E. RECREATION PARK DRAWS VISITORS TO ROCK CREEK [MARYLAND] RESERVOIRS. Soil Conserv. 34(3):57-59. Oct.1968. 1.6 So3S  
Most people who visit and use the Upper Rock Creek Regional Park probably never suspect that it revolves around two flood and sediment control impoundments, sculptured out of the earth with bulldozers. They see the water-oriented park for its boating, fishing, picnicking, and related recreational opportunities and accept the landscape as Nature's design.
- 15486 Loe, J. NOW THERE'S RECREATION AT COTILE [LAKE, LOUISIANA]. Soil Conserv. 34(3):60-62. Oct.1968. 1.6 So3S  
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- 15488 Phillips, C. G. TAKING THE MEASURE OF OUTDOOR RECREATION RESOURCES. Soil Conserv. 34(3):63-64. Oct.1968. 1.6 So3S
- 15489 Sharman, E. D., and Vecchia, G. PRIVATE AND PUBLIC RANGE COMBINED IN PLAN FOR COORDINATED MANAGEMENT OF FORAGE. Soil Conserv. 34(3):65-66. Oct.1968. 1.6 So3S  
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- 15490 Keller, W. K., and Britt, P. R. FROM SCRUB OAK TO PINE; A FOREST RECREATED. Soil Conserv. 34(3):66. Oct.1968. 1.6 So3S  
Planting in North Carolina.
- 15491 Sheppard, A. V., and Bird, N. W. HISTORIC TEXAS RANCH ADDS ANOTHER CHAPTER WITH GREAT PLAINS CONSERVATION PROGRAM. Soil Conserv. 34(3):67. Oct.1968. 1.6 So3S  
Chiefly soil conservation.
- 15492 U. S. D. A. Soil Conservation Service. RE-SOURCE CONSERVATION AND DEVELOPMENT PROJECTS; HANDBOOK. Washington, 1967. 98 p. Sept.1967. aS914.U5 1967
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## WEEDS AND POISONOUS PLANTS

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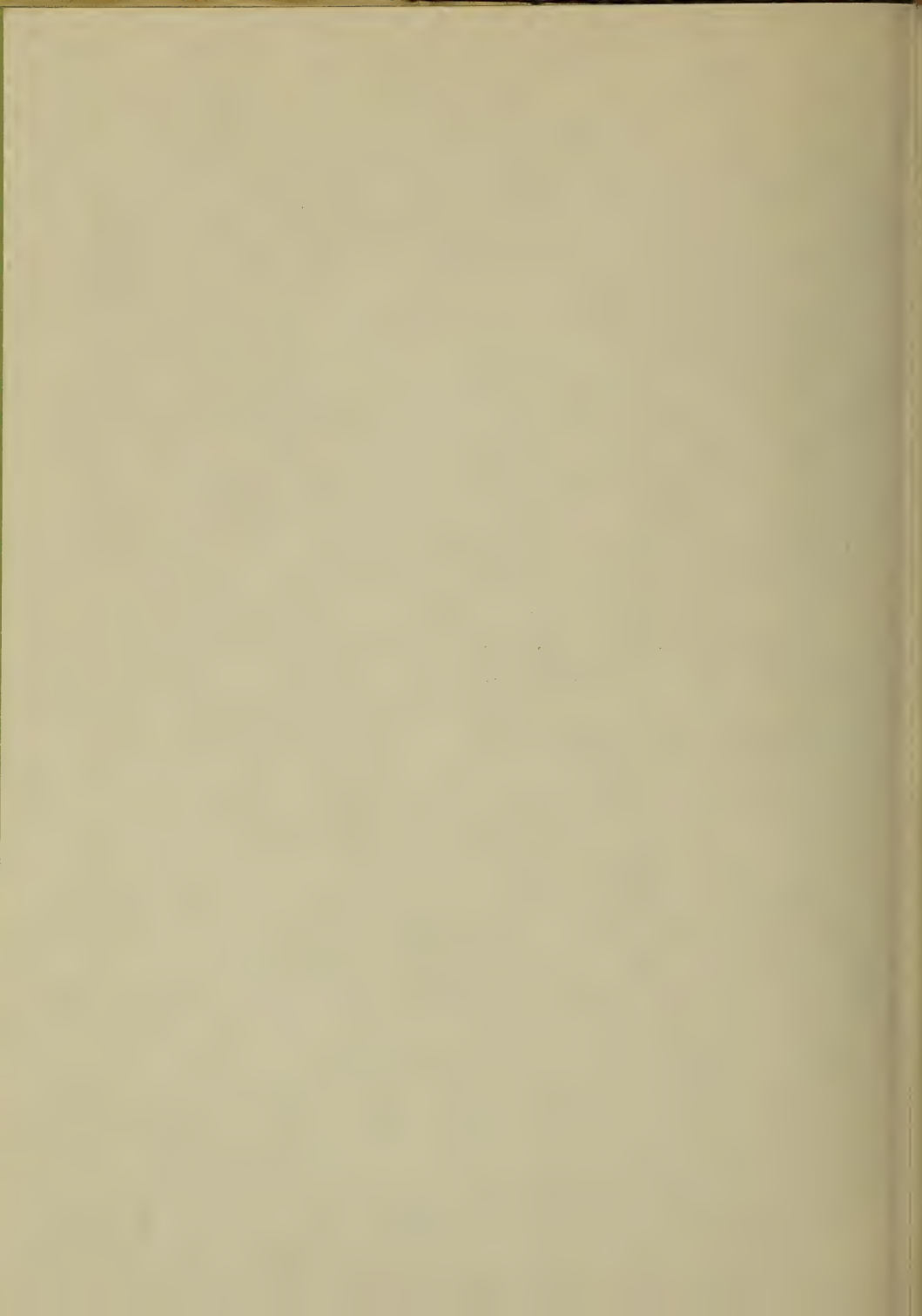
The Director of the Library has expressed the hope that the transfer can be accomplished without undue interruption of normal library operations. However, the relocation of the Library's immense collections will entail unavoidable problems and delays in service. While the moving is actually in progress, reference and lending services will be provided insofar as possible by the Library's Beltsville Branch to Department personnel only. Service from the main Library collection will be drastically curtailed.

After May 1, please return all publications to

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# BIBLIOGRAPHY OF AGRICULTURE

Vol. 33

April 1969

No. 4

The Bibliography of Agriculture is an index to the literature of agriculture and the allied sciences received in the National Agricultural Library. Publications from any country are indexed, provided they are in one of the languages shown in CAPITALS at top of next column, or have summaries, abstracts, or translated titles in one of those languages.

Literature received more than one year after publication is generally not indexed. Exceptions are made for important scientific publications.

Indexing of articles on the processing of agricultural products is limited to those on primary processing.

Unsigned articles and those signed with pseudonyms or initials, editorials, letters to the editor, and columns appearing regularly, are omitted.

For more detailed coverage of the literature on pests and their control, please consult the Pesticides Documentation Bulletin, a biweekly publication of the National Agricultural Library.

## FORMAT

The Bibliography is a classified arrangement of references under the following subjects:

- USDA Publications
- State Agricultural Experiment Station Publications
- State Agricultural Extension Service Publications
- Agricultural Economics and Rural Sociology
- Agricultural Products
- Animal Industry
- Engineering
- Entomology
- Food and Human Nutrition
- Forestry
- Plant Science
- Soils and Fertilizers
- Miscellaneous

The classified section is followed by the listing of:

- New Periodicals and Serials
- Translations
- Food and Agriculture Organization of the United Nations (FAO) Publications

The last section of each monthly issue, except November, is the Author and Subject index for that issue.

For monographs the title is shown in the original language, followed by the English version. Titles of foreign language articles in serial publications are given in English only; the language of the text is shown in abbreviated form in parentheses at the end of the title. The following notations are used:

(Af)	Afrikaans	(Ic)	Icelandic
(Al)	Albanian	(In)	Indonesian
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(Arm)	Armenian	(Ja)	JAPANESE
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Abbreviated names of the publications cited prior to July 1, 1964 are those from USDA Miscellaneous Publication 765-List of Serials Currently Received in the Library of the United States Department of Agriculture, July 1, 1957. Abbreviated names of all new periodical titles received after July 1, 1964, are taken from the American Standard for Periodical Title Abbreviations. As time allows, abbreviations set up for titles before that date will be converted to the new form.

The presence of the term "Ref." in the citation indicates that the article contains ten or more references to the literature.

Following each citation is the Library classification number which should be used when requesting loans or reproduction of articles.

## FREQUENCY OF PUBLICATION

The Bibliography is published monthly. The December issue is devoted wholly to a subject index and the cumulated Personal and Organizational index to the preceding eleven issues.

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State Agricultural Experiment Station and Extension Service publications. Publications issued by State Agricultural Experiment Stations and Extension Services are available except where noted, and as long as the supply lasts, from the issuing station or service. The National Agricultural Library does not distribute them; however, reproductions are available at regular Library rates.

### Technical Reports

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Use of funds for printing this publication approved by the Director of the Bureau of the Budget (January 3, 1969).



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- 22010 Manchester, A. C.  
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- 22021 International Organization of Citrus Virologists. Committee on Indexing Procedures, Diagnosis, and Nomenclature.  
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- 22032 Ruggieri, G.  
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- 22041 Kulik, M. M.  
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- 22042 Spears, J. F.  
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- 22136 Chandler, E.  
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to provide this country with ample supplies for a favor-  
able export in 1968-69. However, the increasingly com-  
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the momentum needed to reverse the drop in U.S. exports  
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- 22148 Nicolini, M. A.  
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ty, the oldest oilseed known to man still finds an abun-  
dant use—both edible and inedible—throughout the  
world.

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GREECE SETS OUT TO SOLVE ITS BASIC  
FARM PROBLEMS. Foreign Agr. 6(50):12. Dec. 9, 1968.  
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The Greek Government has begun to implement  
the agricultural proposals set forth in its 5-year econo-  
mic development plan (1968-72). As announced early this  
year, the plan noted the problems impeding further agri-  
cultural progress and proposed to tackle some of them in  
order to modernize farming, raise production, and better  
integrate agriculture and the rest of the economy. Solu-  
tion of the major farm problems is also intended to help  
lay the groundwork for harmonization of Greek policy  
with that of the Common Market, of which Greece is an  
associate member.

- 22150 Howland, K. E.  
LONDON'S SMITHFIELD MARKET MOVES IN-  
TO ITS SECOND CENTURY. Foreign Agr. 6(51):2-4.  
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Policy to cut imports.

- 22152 Hobbes, J. C.  
GLOOMY OUTLOOK; JUTE AND CORDAGE  
FIBERS. Foreign Agr. 6(51):6-7. Dec. 16, 1968.  
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Hard times have overtaken growers of cordage  
fibers—sisal, henequen, and abaca (manila hemp). Chang-  
ing demand for cordage and growing competition from  
manmade fibers in industrialized countries are seriously  
eroding the fiber export earnings of East African coun-  
tries, the Philippines, Brazil, and Haiti. Also, concern is  
growing for the future of the Indian and Pakistan jute in-  
dustries.

- 22153 Ransom, E. T.  
NEW SUPPORTS FOR BEEF AND DAIRY  
FARMERS INITIATED. Foreign Agr. 6(51):8. Dec. 16,  
1968. A281.9 F76Fo

The Irish Government has announced new mea-  
sures of support for owners of dairy and beef herds.  
Prices of manufacturing milk are to be increased by one  
cent per imperial gallon of 10.32 pounds, and a new beef  
incentive bonus scheme is to be introduced entailing the  
payment of £ 8 (\$19.20) per year for each calved cow in  
excess of two in beef herds.

- 22154 Payne, F. N.  
THE RAISIN AND NUT TRADE; HOLIDAY RE-  
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Holiday consumption.

- 22155 Persi, A. R.  
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OUTLOOK CONFERENCE SEES TWO-YEAR DECLINE IN  
CANADIAN FARM INCOME. Foreign Agr. 6(52):5-6.  
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- 22156 Parker, J. B.  
AFGHANISTAN'S BUMPER FOODGRAIN CROPS. Foreign Agr. 6(52):7-8. Dec.23,1968. A281.9 F76Fo  
The influx of mechanization and technology in Afghanistan has paid off well for the country's foodgrain farmers. This year's harvest brought in bumper crops of wheat, rice, and corn for a total harvest of almost 5 million metric tons—1 million more than in 1967. Afghanistan has also been importing about 100,000 tons of wheat annually—mostly from the United States under P.L. 480—to meet food needs of urban centers.
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- 22162 Horsley, B. J.  
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- 22164 Brown, L. R.  
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- 22166 Scholz, W. L.  
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- 22168 Schilling, G. A. W.  
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- 22172 McConnell, J. L.  
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Pinus.
- 22173 Slayton, S. H.  
TRAVELING TREE BALER WORKS WELL. Tree Planters' Notes 19(4):15-18. Winter 1969. 1.962 C5T71  
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A NEW TABLE MODEL CONE CUTTER. Tree Planters' Notes 19(4):19-20. Winter 1969. 1.962 C5T71  
To evaluate seed crops and insect losses.
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- 22176 Cram, W. H.  
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- 22177 Posey, C. E., and Walker, R. W.  
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DWARF MISTLETOE [ARCEUTHOBium CAMPYLOPODUM BLUMERI] ON SUGAR PINE [PINUS LAMBERTIANA]. U. S. Forest Serv. Forest Pest Leaf. 113,4 p. Oct.1968. A423.9 F764
- 22181 Carolin, V. M., and Knopf, J. A. E.  
THE [COLORADIA] PANDORA MOTH. U. S. Forest Serv. Forest Pest Leaf. 114,7 p.,map. Sept.1968. A423.9 F764  
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- 22182 Wickman, B. E.  
FIR TREE BORER [SEMANOTUS LITIGIOSUS]. U. S. Forest Serv. Forest Pest Leaf. 115,6 p.,map. Oct. 1968. A423.9 F764  
Coniferae pest.
- 22183 U. S. D. A. Forest Service. Forest Products Laboratory.  
WOOD FINISHING; WATER-REPELLENT PRESERVATIVES. U. S. Forest Serv. Res. Note FPL-0124, 7 p. Aug.1968. A99.9 F7634Un
- 22184 U. S. D. A. Forest Service. Forest Products Laboratory.  
SELECTION AND PROPERTIES OF WOODWORKING GLUES. U. S. Forest Serv. Res. Note FPL-0138,rev.,11 p. Oct.1968. A99.9 F7634Un
- 22185 Hallock, H.  
TAPER-TENSION SAW, A NEW REDUCED KERF SAW. U. S. Forest Serv. Res. Note FPL-0185, 10 p. June 1968. A99.9 F7634Un  
Wisconsin University, cooperating.  
Design characteristics and performance data for the new "taper-tension" saw developed at the Forest Products Laboratory are presented. The new circular saw was shown to reduce kerf by about 3/32 inch when sawing pine cants into 4/4 boards.  
In a series of performance tests, "taper-tension" sawing accuracy was almost as good as a conventional 7-8 gage saw, and considerably better than a conventional narrow-kerf 10-11 gage saw.  
The new saw is tapered in a compound manner, so the board rubs the inner area of the plate centered about 60 percent of the distance from eye to rim, rather than the saw center. It is thus prestressed by a unique process, combining features of the hammered prestressing system with frictional stressing through the use of the heat generated by sawing.

## FOREST SERVICE

- 22169 Larson, H., and Jamrock, E.  
SNOWMOBILE SEEDING. Tree Planters' Notes 19(4):1-3. Winter 1969. 1.962 C5T71  
Forests in Minnesota.
- 22170 De Byle, N. V.  
BLACK POLYETHYLENE MULCH INCREASES SURVIVAL AND GROWTH OF A JEFFREY PINE [PINUS JEFFREYI] PLANTATION. Tree Planters' Notes 19(4):7-11. Ref. Winter 1969. 1.962 C5T71
- 22171 Schlaeger, G. D.  
IMPROVED PLASTIC TUBES FOR SEEDLINGS. Tree Planters' Notes 19(4):11-12. Winter 1969. 1.962 C5T71  
Forest planting.



- 22186 Hefty, F. V.  
PORTABLE APPARATUS FOR MEASURING SURFACE IRREGULARITIES IN PANEL PRODUCTS. U. S. Forest Serv. Res. Note FPL-0192, 3 p. May 1968. A99.9 F7634Un

Explains the apparatus developed at the Forest Products Laboratory to make possible approximate measurement of vertical deformations on wood surfaces. The portable apparatus uses a shadow-casting technique, directing a slit of bright light at two wires to produce sharply defined shadows on the surface. Distortion of the shadows viewed perpendicular to the surface provides a magnified picture of the vertical distortion at that point.

A fixed-focus camera unit with 3-inch, wide-angle lens and Polaroid back produces photographs of the surface under study. The self-contained apparatus can be used on horizontal or vertical surfaces and in any lighting.

- 22187 McMillen, J. M.  
PREVENTION OF PINKISH-BROWN DISCOLORATION IN DRYING MAPLE SAWWOOD. U. S. Forest Serv. Res. Note FPL-0193, 9 p. May 1968. A99.9 F7634Un

Wisconsin University, cooperating.

Hard maple lumber producers have difficulty in consistently kiln drying the wood to a light natural color. To obtain the very whitest color specified for some products, they believe it is necessary to start with winter-cut, air-dried material.

This experiment showed that either white or discolored lumber could be produced during the kiln drying of air-dried or summer-cut green 5/4 hard maple by adjusting kiln conditions. A low-temperature, moderate relative humidity kiln schedule produced the white stock. Various operational malfunctions that cause unwanted high humidity conditions are discussed, as are precautions in the use of the moderate humidity schedule.

- 22188 Peters, C. C., and Zenk, R. R.  
EFFECTS OF PRECOMPRESSION ON SLICED WOOD 1/2 AND 1 INCH IN THICKNESS. U. S. Forest Serv. Res. Note FPL-0194, 6 p. July 1968. A99.9 F7634Un

Wisconsin University, cooperating.

Precompressed and control flitches of chestnut oak and Douglas-fir were sliced 1/2 and 1 inch thick using a modified milling machine. Slicing was done at 70° and 200° F. and at two levels of compression and restraint. Based on measurements of checks and thickness variability of slices, precompression had little effect on the quality of slice. Compressive forces, as high as 4,187 pounds per inch of length, were reduced as much as one-half by precompression.

- 22189 Simpson, W. T., and Skaar, C.  
EFFECT OF TRANSVERSE COMPRESSIVE STRESS ON LOSS OF WOOD MOISTURE. U. S. Forest Serv. Res. Note FPL-0197, 3 p. July 1968. A99.9 F7634Un

Wisconsin University, cooperating.

The sorption isotherm of wood is stress dependent. At constant temperature and relative humidity the equilibrium moisture content of wood is increased by a transverse tensile stress and decreased by a transverse compressive stress. Stress is thus a driving force for moisture in wood and could be a significant factor in moisture movement during the drying process. The reduction in moisture content per unit of stress under a compressive stress increased with increasing initial moisture content and also appeared to increase with increasing stress level. These results suggest that this stress-related phenomenon may be significant in a better understanding of moisture movement in the early stages of drying lumber when the moisture content is high. Ultimately this kind of information could lead to improvements in lumber-drying.

- 22190 Simpson, W. T., and Soper, V. R.  
STRESS-STRAIN BEHAVIOR OF FILMS OF FOUR ADHESIVES USED WITH WOOD. U. S. Forest Serv. Res. Note FPL-0198, 7 p. July 1968. A99.9 F7634Un

Wisconsin University, cooperating.

Mechanical properties of an adhesive joint depend largely on the mechanical properties of the adhesive. A logical approach to joint design requires knowledge of these properties and the factors influencing them. This report describes methods of casting thin adhesive films and the methods and results of stress-strain tests in

(Continued in next column)

tension. The adhesive formulations tested varied from an easily deformable rubber-base adhesive to a stiff resorcinol resin. A comparison of certain mechanical properties of different adhesives can result in a wiser choice of adhesive for a particular application.

- 22191 Stage, A. R.  
A TREE-BY-TREE MEASURE OF SITE UTILIZATION FOR GRAND FIR RELATED TO STAND DENSITY INDEX. U. S. Forest Serv. Res. Note INT-77, 7 p. 1968. A99.9 F764Un

- 22192 Ziemer, R. R.  
SOIL MOISTURE DEPLETION PATTERNS AROUND SCATTERED TREES. U. S. Forest Serv. Res. Note PSW-166, 13 p., map. 1968. A99.9 F7652

Soil moisture was measured around an isolated mature sugar pine tree (*Pinus lambertiana* Dougl.) in the mixed conifer forest type of the north central Sierra Nevada, California, from November 1965 to October 1966. From a sequence of measurements, horizontal and vertical soil moisture profiles were developed. Estimated soil moisture depletion from the 61-foot radius plot for the 1966 summer depletion season was 22.57 inches.

- 22193 Hansen, E. A., and Ffolliott, P. F.  
OBSERVATIONS OF SNOW ACCUMULATION AND MELT IN DEMONSTRATION CUTTINGS OF PONDEROSA PINE [*Pinus ponderosa*] IN CENTRAL ARIZONA. U. S. Forest Serv. Res. Note RM-111, 12 p. Ref. 1968. A99.9 F7632Us

A clearcut block on a north aspect and strips with widths of one and one-and-one-half times tree height on an east aspect increased snow accumulation and increased rates of melt and daily water loss. A strip three-fourths as wide as tree height on a west aspect increased snow accumulation. None of the strips cut on south and southwest aspects affected snowpacks measurably.

- 22194 Bergen, J. D.  
ATMOSPHERIC HUMIDITY MEASUREMENT NEAR THE SNOW SURFACE. U. S. Forest Serv. Res. Note RM-116, 4 p. 1968. A99.9 F7632Us

Describes a technique for measuring atmospheric humidity in the first few centimeters over a snow cover. Results are presented for four observation periods. The water vapor density at a nominal reference level of 2 cm. above the snow surface was found to vary from less than 20 percent to 90 percent of the density corresponding to saturation at the snow surface temperature. Little diurnal variation was found for the Bowen ratio. Possible remedies for difficulties encountered in the measurements are described.

- 22195 Godshall, W. D.  
EFFECTS OF VERTICAL DYNAMIC LOADING ON CORRUGATED FIBERBOARD CONTAINERS. U. S. Forest Serv. Res. Paper FPL-94, 20 p. July 1968. A99.9 F7634U

Bibliography, p.19.

During transportation, stacks of corrugated containers are subjected to vibrations that can produce loading forces much greater than static load weights, causing compressive failure of lower containers in the stack. This report includes a study of the factors involved, development of safe dynamic loading limits for a typical container, and determination of fatigue on container failure.

It was found that a container and its supported load act as a spring-mass system that is sensitive to frequency. Failure of containers was due primarily to simple dynamic overloading and to overloading resulting from resonant amplification of input vibration levels. Because the system is frequency sensitive, safe loading limits are a function of the input vibration frequency. Within the scope of this study, fatigue appeared to have little effect on the compressive strength of corrugated containers.

- 22196 Wahlgren, H. E., and others.  
SURVEY OF SPECIFIC GRAVITY OF EIGHT MAINE CONIFERS. U. S. Forest Serv. Res. Paper FPL-95, 12 p., map. Ref. July 1968. A99.9 F7634U  
G. Baker, R. R. Maeglin, and A. C. Hart, joint authors.

- 22197 Doyle, D. V.  
PROPERTIES OF NO. 2 DENSE KILN-DRIED SOUTHERN PINE DIMENSION LUMBER. U. S. Forest Serv. Res. Paper FPL-96, 24 p. July 1968. A99.9 F7634U  
Abstract, verso front cover.

22198 Gerhards, C. C.  
EFFECTS OF TYPE OF TESTING EQUIPMENT AND SPECIMEN SIZE ON TOUGHNESS OF WOOD. U. S. Forest Serv. Res. Paper FPL-97, 12 p. July 1968. A99.9 F7634U

Summary, verso front cover.

22199 Dale, A.  
COMPARATIVE WOOD ANATOMY OF SOME SHRUBS NATIVE TO THE NORTHERN ROCKY MOUNTAINS. U. S. Forest Serv. Res. Paper INT-45, 73 p. Ref. 1968. A99.9 F764U

22200 Lowery, D. P., Krier, J. P., and Hann, R. A.  
HIGH-TEMPERATURE DRYING OF LUMBER; A REVIEW. U. S. Forest Serv. Res. Paper INT-48, 10 p. 1968. A99.9 F764U

Kiln.

Summary, p. 7.

22201 Wadsworth, F. H.  
PUBLIC FORESTRY RESEARCH IN LATIN AMERICA, ITS STATUS AND NEEDS. U. S. Forest Serv. Res. Paper ITF-6, 12 p. May 1968. A99.9 F7637

Evidence of problems confronting forestry research in Latin America led to a survey of the 16 major institutions. Their research programs were found to be broad and overlapping. Program orientation is weak. Training opportunities are too few. Regional coordination of research is needed, and these institutions appear ready for it. Stronger support of expert advisors, voluntary coordination of programs, and a series of regional training courses are suggested.

22202 Maldonado, E. D.  
SHAPING AND PLANNING CHARACTERISTICS OF PLANTATION-GROWN MAHOGANY AND TEAK. U. S. Forest Serv. Res. Paper ITF-7, 22 p. May 1968. A99.9 F7637

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Summary, p. 1.

22203 Hansen, E. A.  
STABILIZING ERODING STREAMBANKS IN SAND DRIFT AREAS OF THE LAKE STATES. U. S. Forest Serv. Res. Paper NC-21, 12 p., map. Ref. 1968. ASD11.A34

Banks are stabilized to protect adjacent high-value items such as cabins and campgrounds, or to reduce reservoir or lake sedimentation rates. Also, bank stabilization is undertaken as one part of fish habitat improvement programs. Rock rip-rap is the best material for bank stabilization in most cases. It does not deteriorate with time and it blends in well with the surroundings. The upper part of the bank will revegetate naturally. However, sloping and seeding will accelerate revegetation.

22204 Heede, B. H.  
CONVERSION OF GULLIES TO VEGETATION-LINED WATERWAYS ON MOUNTAIN SLOPES. U. S. Forest Serv. Res. Paper RM-40, 11 p. 1968. A99.9 F7632U

Four gullies were successfully converted to waterways on slopes of the Rocky Mountains in Colorado. Three years after treatment, they had lost only 9 percent as much soil as comparable untreated gullies. Careful engineering survey and design, close construction supervision, and good response to revegetation measures were responsible for the success. Since limits of applicability could not be established, the method is proposed for application on sites comparable to those of the study area.

22205 Hewlett, J. D., and Douglass, J. E.  
BLENDING FOREST USES. U. S. Forest Serv. Res. Paper SE-37, 15 p., map. July 1968. A99.9 F7623U

Compatibility of forest management practices on a 356-acre Southern Appalachian watershed is examined in this unique experiment to determine the feasibility of intensive management for wood, water, wildlife, and recreation. An efficient and stable access system is stressed, and the effect of various woods practices on the four basic resources is rated. Increases are shown in water yield, game forage, quality timber growth, and general use of the area. Some unresolved conflicts among uses of the forest are revealed.

U. S. D. A. Forest Service.  
22206 NATIONAL FOREST SYSTEM; AREAS AS OF JUNE 30, 1968. Washington, 1968. 20 p., map. 1 F765 Summary, p. 1.

22207 U. S. D. A. Forest Service. Pacific Northwest Region. UMATILLA NATIONAL FOREST, OREGON. Pendleton, Oregon, 1968. 54 p., folder., map. ASD428.U4A5 1968

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Includes opening remarks by J. S. A. Spreull.

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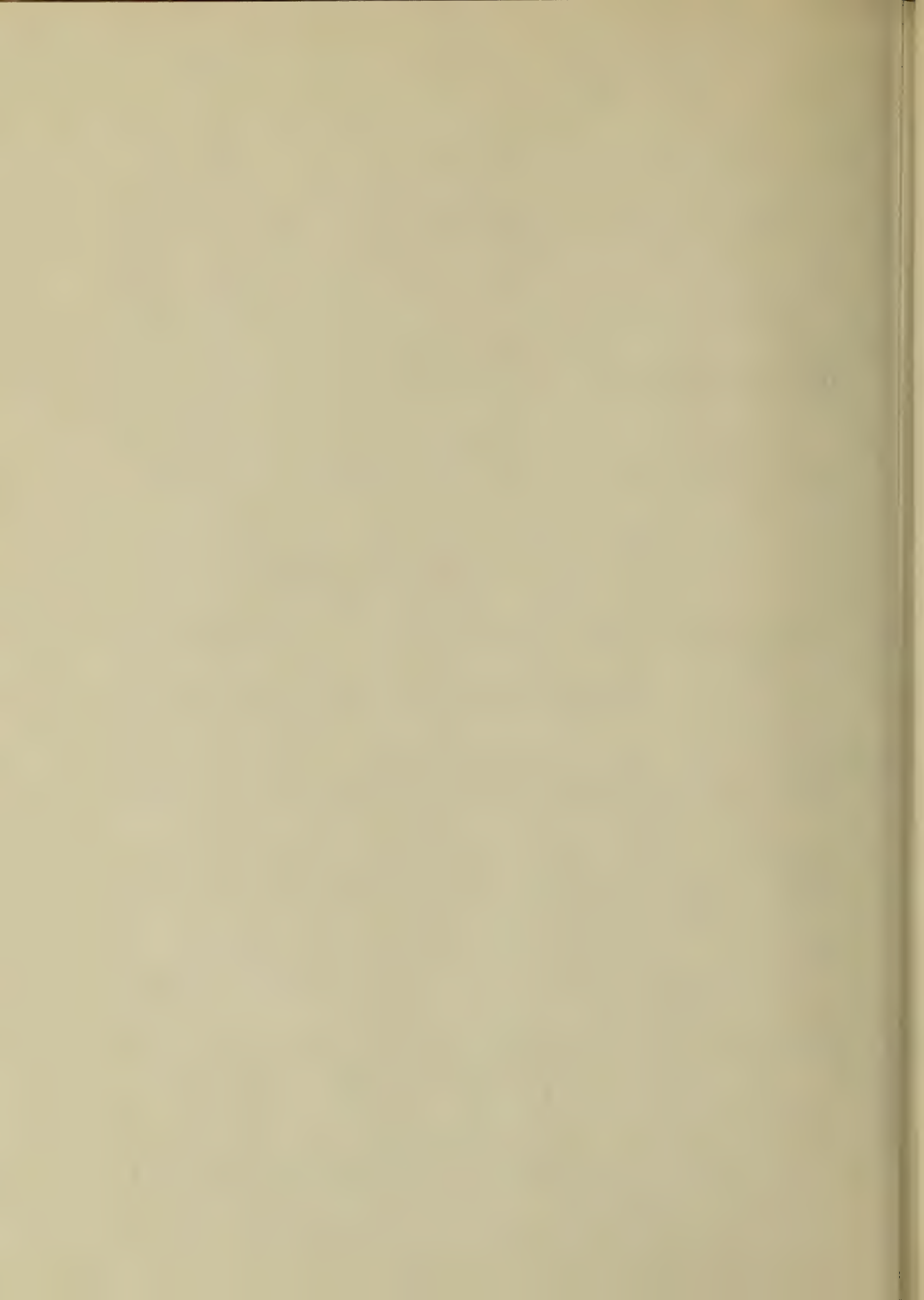
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While the moving is actually in progress, service from the main Library collection will be drastically curtailed.

Reference and lending services will be provided insofar as possible by the Beltsville Branch to Department personnel only.

The July and August issues of the Bibliography of Agriculture will be issued as usual but will consist mainly of accumulated citations to literature published prior to 1968.

Full service will resume as soon as possible after the move in June.





# BIBLIOGRAPHY OF AGRICULTURE

Vol. 33

May 1969

No. 5

The Bibliography of Agriculture is an index to the literature of agriculture and the allied sciences received in the National Agricultural Library. Publications from any country are indexed, provided they are in one of the languages shown in CAPITALS at top of next column, or have summaries, abstracts, or translated titles in one of those languages.

Literature received more than one year after publication is generally not indexed. Exceptions are made for important scientific publications.

Indexing of articles on the processing of agricultural products is limited to those on primary processing.

Unsigned articles and those signed with pseudonyms or initials, editorials, letters to the editor, and columns appearing regularly, are omitted.

For more detailed coverage of the literature on pests and their control, please consult the Pesticides Documentation Bulletin, a biweekly publication of the National Agricultural Library.

## FORMAT

The Bibliography is a classified arrangement of references under the following subjects:

- USDA Publications
- State Agricultural Experiment Station Publications
- State Agricultural Extension Service Publications
- Agricultural Economics and Rural Sociology
- Agricultural Products
- Animal Industry
- Engineering
- Entomology
- Food and Human Nutrition
- Forestry
- Plant Science
- Soils and Fertilizers
- Miscellaneous

The classified section is followed by the listing of:

- New Periodicals and Serials
- Translations
- Food and Agriculture Organization of the United Nations (FAO) Publications

The last section of each monthly issue, except November, is the Author and subject index for that issue.

For monographs the title is shown in the original language, followed by the English version. Titles of foreign language articles in serial publications are given in English only; the language of the text is shown in abbreviated form in parentheses at the end of the title. The following notations are used:

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The presence of the term "Ref." in the citation indicates that the article contains ten or more references to the literature.

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Agricultural Economic Reports

28901 Stinson, T. F.  
FINANCING INDUSTRIAL DEVELOPMENT  
THROUGH STATE AND LOCAL GOVERNMENTS. U. S.  
D. A. Agr. Econ. Rep. 128, slightly rev., 14 p. Nov. 1968.  
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model is tedious and may take years, the primary im-  
mediate advantage offered by this approach is a broad  
theoretical framework to give direction to firm and indus-  
try groups working to solve these problems. In the long  
run, this approach could furnish many new economies in  
cotton processing and marketing through greater control  
of forces affecting processing costs and market values of  
cotton products.

Simple hypothetical examples of firm and indus-  
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Oranges in nonvented cartons absorbed more biphenyl than oranges in vented cartons.

Biphenyl residues in oranges increased as the number of pads per carton increased regardless of the biphenyl dosage.

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Sugar beet and sugarcane industry.

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eign Agr. Serv. FAS-M-200, 7 p. Nov. 1968.  
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NEODIPRION TAEDAE LINEARIS; A SAWFLY  
PEST OF LOBLOLLY AND SHORTLEAF PINES. U. S.  
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A423.9 F764

29021 Leonard, R. E., and Eschner, A. R.  
A TREETOP TRAMWAY SYSTEM FOR METE-  
OROLOGICAL STUDIES. U. S. Forest Serv. Res. Paper  
NE-92, 10 p. 1968. A99.9 F7622Un

A system of tramways was built between  
several towers so that meteorological instruments could  
be passed above the forest canopy to measure spatial  
variation in reflected short-wave radiation. The system  
has operated well under all weather conditions for over  
a year. Construction details for the tramway system are  
described.

29022 Wilcox, W. W.  
CHANGES IN WOOD MICROSTRUCTURE  
THROUGH PROGRESSIVE STAGES OF DECAY. U. S.  
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THERMAL INSULATION FROM WOOD FOR  
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Ref. July 1968. A99.9 F7634U

Thermal insulation is an important component  
of modern homes and other buildings. It provides for the  
comfort required for livability and, when properly de-  
signed for and installed, pays for itself in fuel savings  
during winter heating and power savings during summer  
cooling.

Various kinds of thermal insulation made from  
wood are described. Considerations required for proper  
design are discussed. Design values for wood and wood-  
base materials are presented. Methods are presented for  
estimating heat flow, fuel savings, and temperatures on  
surfaces and within typical constructions. The effects of  
moisture as influenced by insulation and cold weather are  
discussed. Proper vapor barrier practice for good re-  
sults are presented.

29024 Maki, A. C.  
FINITE ELEMENT TECHNIQUES FOR ORTHO-  
TROPIC PLANE STRESS AND ORTHOTROPIC PLATE  
ANALYSIS. U. S. Forest Serv. Res. Paper FPL-87, 39 p.  
June 1968. A99.9 F7634U

This paper develops finite element techniques  
for applicability to plane stress problems and plate prob-  
lems involving orthotropic materials such as wood and  
plywood. Applications to limited examples show that the  
methods have merit especially if means of handling very  
large systems of equations are utilized.

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WOOD QUALITY OF LOBLOLLY PINE AFTER  
THINNING. U. S. Forest Serv. Res. Paper FPL-89, 11 p.  
May 1968. A99.9 F7634U

This study provides a comparison of loblolly  
pine wood produced 4 years after heavy thinning and  
pruning of 9-year-old stands with wood of unthinned  
stands of the same age.

A three-fold increase in radial growth was  
found to be accompanied by a significant increase in  
specific gravity and percentage of latewood in response  
to heavy thinning and pruning. A change in the relation-  
ship between specific gravity and percentage of latewood  
suggested that there were fundamental changes in the  
wood structure associated with thinning and pruning.

29026 Bendtsen, B. A.  
MECHANICAL PROPERTIES AND SPECIFIC  
GRAVITY OF A RANDOMLY SELECTED SAMPLE OF  
SPRUCE PINE. U. S. Forest Serv. Res. Paper FPL-92,  
8 p. May 1968. A99.9 F7634U

Presents the first mechanical properties re-  
ported for spruce pine (*Pinus glabra*), as determined from  
a randomly selected sample.

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LONGTIME PERFORMANCE OF TRUSSED  
RAFTERS; INITIAL EVALUATION. U. S. Forest Serv.  
Res. Paper FPL-93, 12 p. July 1968. A99.9 F7634U

Preliminary results of study of longtime per-  
formance of trussed wood rafters with various connec-  
tion systems. Describes test equipment and procedure,  
destructive evaluation of control rafters and initial de-  
flections of rafters being subjected to longtime loading.

29028 Bendtsen, B. A., and Eslyn, W. E.  
HOUSE FOUNDATION OF TREATED WOOD  
AFTER 30 YEARS' SERVICE. U. S. Forest Serv. Res.  
Paper FPL-98, 10 p. Aug. 1968. A99.9 F7634U

Mechanical properties were measured and  
decay was investigated on treated wood foundation mate-  
rials from an experimental house that stood on the U.S.  
Forest Products Laboratory grounds for about 30 years.  
The results provide evidence that the foundation gave  
excellent service and met its requirements of use.

29029 Hiller, C. H.  
TRENDS OF FIBRIL ANGLE VARIATION IN  
WHITE ASH. U. S. Forest Serv. Res. Paper FPL-99, 8 p.  
Sept. 1968. A99.9 F7634U

Reports the variation of the fibril angle within  
the trunk of a fast-grown white ash and the association  
of the fibril angle with ring width, fiber length, radial  
fiber diameter, and fiber wall thickness.

29030 Orosz, I.  
SOME NONDESTRUCTIVE PARAMETERS FOR  
PREDICTION OF STRENGTH OF STRUCTURAL LUM-  
BER. U. S. Forest Serv. Res. Paper FPL-100, 6 p. Oct.  
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In general, strength ratio is a good predictor of  
strength of structural lumber; however, when lumber has  
no defects (100 percent strength ratio) this estimator can-  
not be effective. In such cases, some characteristics of  
clear wood, such as modulus of rupture of small clear  
specimens, modulus of elasticity, and specific gravity,  
make reasonable predictors of strength. Because all di-  
mension lumber is intermediate in quality (0-100 percent  
strength ratio), it follows that a combination of strength  
ratio and modulus of elasticity, strength ratio and modu-  
lus of rupture of small clear specimens, or strength ratio  
and specific gravity, provides an improved model.

This study suggests grading variables and func-  
tions that are capable of better strength predictions than  
strength ratio or modulus of elasticity alone. It provides  
well supported bases for improving stress grading of  
lumber.

29031 Wilkinson, T. L.  
STRENGTH EVALUATION OF ROUND TIMBER  
PILES. U. S. Forest Serv. Res. Paper FPL-101, 44 p.  
Ref. Dec. 1968. A99.9 F7634U

Strength properties in compression parallel to  
grain and bending were determined for Douglas-fir,  
southern pine, and red oak timber piles. The effect of  
kiln drying of southern pine piles on crushing strength  
was investigated. The results should be useful in develop-  
ing timber pile specifications.

- 29032 Brickell, J. E.  
A METHOD FOR CONSTRUCTING SITE INDEX CURVES FROM MEASUREMENTS OF TREE AGE AND HEIGHT; ITS APPLICATION TO INLAND DOUGLAS-FIR [PSEUDOTSUGA MENZIESII GLAUCOA]. U. S. Forest Serv. Res. Paper INT-47,23 p.,map. Ref. 1968. A99.9 F764U

Describes a method for constructing site index curves from paired measurements of tree age and tree height. Use of this method results in polymorphic curves, but anamorphic curves would be obtained if the data so indicate. Includes site index curves for inland Douglas-fir in the northern and central Rocky Mountains to illustrate programs also are given.

- 29033 Stage, A. R., Dodge, R. C., and Brickell, J. E.  
NETVSL: A COMPUTER PROGRAM FOR CALCULATION OF TREE VOLUMES WITH INTERIOR DEFECT. U. S. Forest Serv. Res. Paper INT-51,30 p. 1968. A99.9 F764U

This comprehensive computer program, written in FORTRAN IV language, calculates gross and net volume, surface area, and length from stem measurements. Tree input data include measurements of lengths, diameters, and cull dimensions obtained from felled trees; gross volumes of standing trees may be computed from Barr and Stroud optical dendrometer measurements. Volume units include cubic feet, Scribner and International 1/4" log scale. Various merchantability standards can be applied simultaneously to identical input data to obtain correspondingly various volume data output. This paper includes typical instructions for collecting and compiling tree data.

- 29034 Hyvarinen, M. J.  
PAPER BIRCH [BETULA Papyrifera]: ITS CHARACTERISTICS, PROPERTIES, AND USES: A REVIEW OF RECENT LITERATURE. U. S. Forest Serv. Res. Paper NC-22,12 p. 1968. aSD11.A34

Reviews information on paper birch resources, silvics, wood quality, properties, and uses; makes recommendations for further research; includes 49 literature citations.

- 29035 Lake States Forest Tree Improvement Conference, 8, Madison, Wisconsin, 1967.  
PROCEEDINGS. U. S. Forest Serv. Res. Paper NC-23,60 p.,map. Ref. 1968. aSD11.A34

Presents 11 papers concerning recent research in forest genetics, physiology, and allied fields. Species discussed include red pine, jack pine, Scotch pine, black spruce, larch, yellow birch, sugar maple, silver maple, cottonwood, and walnut.

- 29036 Clausen, K. E.  
VARIATION IN HEIGHT GROWTH AND GROWTH CESSATION OF 55 YELLOW BIRCH [BETULA ALLEGHANIENSIS] SEED SOURCES. U. S. Forest Serv. Res. Paper NC-23:1-4, map. 1968. aSD11.A34

Conclusion, p.4.

- 29037 King, J. P.  
SEED SOURCE VARIATION IN TRACHEID LENGTH AND SPECIFIC GRAVITY OF FIVE-YEAR-OLD JACK PINE (PINUS BANKSIANA LAM.) SEEDLINGS. U. S. Forest Serv. Res. Paper NC-23:5-9, map. 1968. aSD11.A34

Conclusion, p.9.

- 29038 Sajdak, R. L.  
VARIATION IN BARK CHARACTERS AND WOOD SPECIFIC GRAVITY OF SUGAR MAPLE [ACER SACCHARUM]. U. S. Forest Serv. Res. Paper NC-23:10-14. 1968. aSD11.A34

Summary, p.14.

- 29039 Baker, G., and Shottafer, J. E.  
SPECIFIC GRAVITY RELATIONSHIPS IN PLANTATION-GROWN RED PINE [PINUS RESINOSA]. U. S. Forest Serv. Res. Paper NC-23:15-19. 1968. aSD11.A34

- 29040 Gordon, J. C., and Gatherum, G. E.  
PHOTOSYNTHESIS AND GROWTH OF SELECTED SCOTCH PINE [PINUS SYLVESTRIS] SEED SOURCES. U. S. Forest Serv. Res. Paper NC-23:20-23. 1968. aSD11.A34

- 29041 Einspahr, D. W., Benson, M. K., and Peckham, J. R.  
WOOD PROPERTY VARIATION IN POPULUS. U. S. Forest Serv. Res. Paper NC-23:24-27. 1968. aSD11.A34

Physical properties.

- 29042 Foulger, A. N., and HacsKaylo, J.  
STEM ANATOMY VARIATION IN COTTONWOOD [POPULUS DELTOIDES] GROWING UNDER NUTRIENT-DEFICIENT CONDITIONS. U. S. Forest Serv. Res. Paper NC-23:41-47. 1968. aSD11.A34

- 29043 Belatinecz, J. J., and Farrar, J. L.  
TRACHEID DEVELOPMENT AND WOOD QUALITY IN LARCH SEEDLINGS UNDER CONTROLLED ENVIRONMENT. U. S. Forest Serv. Res. Paper NC-23:28-36. Ref. 1968. aSD11.A34

Summary, p.36.

- 29044 Maeßlin, R. R., Nelson, N. D., and Wahlgren, H. E.  
WALNUT [JUGLANS] WOOD CHARACTERISTICS IN RELATION TO SOIL-SITE CONDITIONS. U. S. Forest Serv. Res. Paper NC-23:37-40. Ref. 1968. aSD11.A34

This is a report, before completion, of a program that the Forest Products Laboratory has embarked on. It is a concentrated program to find, if possible, one or more intrinsic wood quality criteria for black walnut and hopefully for other hardwood species as well. The program attempts to cover all of the main quality attributes desired by hardwood users. Further, it covers the possibility of finding relationships of these quality criteria to soil-site conditions.

The quality attribute most evident in the hardwoods is aesthetics, or color variation; this is being quantitatively evaluated with a spectrophotometer. Wood texture is being evaluated by anatomical characteristics; and shrinkage, specific gravity, machinability, and strength are being evaluated directly.

- Lamb, F. M., and Murphey, W. K.  
29045 THE GROWTH AND ANATOMICAL FEATURES OF NUTRIENT-DEFICIENT SEEDLINGS. U. S. Forest Serv. Res. Paper NC-23:48-51. Ref. 1968. aSD11.A34

Acacia saccharinum.  
The results of this study indicate that nutrient deficiencies in forest trees may cause disruptions of certain physiological processes which, in turn, may result in reduction of growth and alteration of anatomical features.

Much work remains before the complete effects of nutrient deficiencies on growth and anatomy of forest trees are fully understood. The interaction between nutrient elements is highly complex. Therefore, it is difficult to assign one particular anatomical or growth alteration to a deficiency of a single element. This information is vital, however, if the full potential of our tree improvement programs are to be realized outside the laboratory.

- 29046 Ladell, J. L., Carmichael, A. J., and Thomas, G. H. S.  
CURRENT WORK IN ONTARIO ON COMPRESSION WOOD IN BLACK SPRUCE [PICEA MARIANA] IN RELATION TO PULP YIELD AND QUALITY. U. S. Forest Serv. Res. Paper NC-52-60. Ref. 1968. aSD11.A34

Summary, p.59.

- 29047 Frayer, W. E.  
SNOOP: A COMPUTER PROGRAM FOR 2- AND 3-DIMENSIONAL PLOTTING. U. S. Forest Serv. Res. Paper NE-91,24 p. 1968. A99.9 F7622U

Forest mensuration.  
A computer program called SNOOP, described in detail, allows visual examination of the interaction effects of independent variables by way of three-dimensional plotting. Two-dimensional plotting is also available. The program is written in FORTRAN IV and should run with little or no modification on computers that accept FORTRAN IV, have a 32K core, and have three tape drives or equivalent input/output devices.

- 29048 Safford, L. O.  
TEN-YEAR AVERAGE GROWTH RATES IN THE SPRUCE-FIR REGION OF NORTHERN NEW ENGLAND. U. S. Forest Serv. Res. Paper NE-93,20 p.,map. 1968. A99.9 F7622U

Reports results of a cooperative growth study on 766 plots in natural extensively managed stands. Plots were distributed among 27 stand-condition classes including three levels of stand composition, height, and density. The overall average annual net growth rate was estimated as 41.9 cubic feet per acre with a 2.1 percent sampling error. Stand composition had the strongest influence on forest net growth, which increased as the percent of softwood species increased. Spruce and fir made major contributions to net growth in all stand types.



29049 Yawney, H. W., and Trimble, G. R.  
OAK [QUERCUS] SOIL-SITE RELATIONSHIPS,  
IN THE RIDGE AND VALLEY REGION OF WEST VIRGINIA  
AND MARYLAND. U. S. Forest Serv. Res. Paper  
NE-96, 19 p., map. Ref. 1968. A99.9 F7622Un

An oak soil-site study showed that heights of the five oak species studied (red, scarlet, black, chestnut, and white oak) could be predicted from measurements of five factors: stand age, aspect, slope position, thickness of the A + B horizons, and pH of the A<sub>2</sub> horizon. Compared to a previous study made in the Mountain Region to the west where rainfall was much greater, site index in the Ridge and Valley Region was appreciably lower for comparable soil and topographic locations.

29050 Trimble, G. R.  
GROWTH OF APPALACHIAN HARDWOODS AS  
AFFECTED BY SITE AND RESIDUAL STAND DENSITY.  
U. S. Forest Serv. Res. Paper NE-98, 13 p. 1968.  
A99.9 F7622Un

In a 10-year growth study, Appalachian hardwoods were cut to different residual basal areas on an excellent site (index 85 for oak) and a fair site (index 63 for oak). There were large differences in growth between the two sites, the excellent site producing 1.4 times more cubic volume and 2.1 times more board-foot volume than the fair site. Apparently the lower density on the excellent site reduced stocking of larger trees to a point below full occupancy of the site. However, growth rates of the individual residual trees were greatest at the lowest density, regardless of size.

29051 Wendel, G. W., and Trimble, G. R.  
EARLY REPRODUCTION AFTER SEED-TREE  
HARVEST CUTTINGS IN APPALACHIAN HARDWOODS.  
U. S. Forest Serv. Res. Paper NE-99, 16 p. 1968.  
A99.9 F7622Un

Three years after seed-tree cuttings in Appalachian hardwood stands, and immediately after the removal of the seed trees, small reproduction (stems 1 foot tall to 1 inch d.b.h.) of desirable species was abundant and well-distributed, and was composed of a large proportion of seedling-origin stems. Both species composition of the reproduction and relative abundance of the different species varied greatly with site quality.

29052 Shafer, E. L., and Liscinsky, S. A.  
DESIGN & ANALYSIS FOR MULTIPLE-USE  
STUDIES OF DEER BROWSE & TIMBER PRODUCTION.  
U. S. Forest Serv. Res. Paper NE-100, 25 p. 1968.  
A99.9 F7622Un

#### Management studies.

Describes the design and analysis of an experiment to compare the production of dormant woody deer browse under different intensities of cutting. If similar experiments are conducted in forest stands as uniform as the one used in this study, the authors recommend using a completely randomized design with 54 subplots per treatment plot and 3 replications per treatment.

29053 Wayt, W. A., Acton, R. W., and Whittaker, J. C.  
A LOOK AT COMMERCIAL RECREATION ON  
SMALL WOODLANDS IN OHIO. U. S. Forest Serv. Res.  
Paper NE-101, 11 p. 1968. A99.9 F7622Un

A report on case studies of five commercial recreation developments on small private woodlands in Ohio, suggesting what an investor must consider in undertaking such an enterprise.

29054 Huntzinger, H. J.  
METHODS FOR HANDLING BLACK CHERRY  
[PRUNUS SEROTINA] SEED. U. S. Forest Serv. Res.  
Paper NE-102, 22 p. 1968. A99.9 F7622Un

Percentage of germination.  
Bibliography, p. 22.

29055 Bjorkbom, J. C.  
PLANTING PAPER BIRCH [BETULA Papyrifera]  
IN OLD FIELDS IN MAINE. U. S. Forest Serv. Res.  
Paper NE-103, 12 p. 1968. A99.9 F7622Un

In a study of different methods of sod removal, a series of seven plantations was established in western Maine. After five growing seasons, survival and height growth were better where the sod was removed than where the seedlings were planted directly in the sod. Meadow mice caused much mortality and damage. Deer browsed many of the seedlings. The results, altogether not entirely satisfactory, suggest that paper birch plantations could be successfully established on suitable old-field sites.

29056 Grisez, T. J.  
GROWTH & DEVELOPMENT OF OLDER  
PLANTATIONS IN NORTHWESTERN PENNSYLVANIA.  
U. S. Forest Serv. Res. Paper NE-104, 40 p. 1968.  
A99.9 F7622Un

#### Bibliography, p. 39-40.

Plantations examined in 1939 were re-examined in 1960-61, and sample plots were laid out to obtain data on yield. Red pine and the larches still rated best, but pitch pine and jack pine could no longer be recommended. White pine looked better than it did in 1939, and Norway spruce was still growing well. However, Scotch pine could be recommended only in certain situations. The author concludes that mixed plantations merit favorable consideration.

29057 LaPage, W. F.  
THE ROLE OF CUSTOMER SATISFACTION IN  
MANAGING COMMERCIAL CAMPGROUNDS. U. S. Forest  
Serv. Res. Paper NE-105, 23 p. 1968.  
A99.9 F7622Un

The key to a successful private campground is satisfied customers. A series of studies at New Hampshire's state parks and commercial campgrounds suggests several ways in which the campground manager can increase camper satisfaction and thus promote longer and more frequent visits.

29058 Blum, B. M., and Koelling, M. R.  
EFFECT OF VACUUM PUMPING ON LATERAL  
MOVEMENT OF SAP IN THE MAPLE TREE BOLE.  
U. S. Forest Serv. Res. Paper NE-107, 8 p. 1968.  
A99.9 F7622Un

A study of possible experimental bias due to lateral sap movement between paired tapholes when one was vacuum-pumped. No movement of dyed sap nor diminishing of positive natural sap pressure was observed between tapholes paired 6 inches apart on the tree bole, suggesting that lateral movement of sap between tapholes did not occur.

29059 Blum, B. M., and Gibbs, C. B.  
VARIATION OF SUGAR MAPLE SAP YIELD  
AND ITS INFLUENCE ON EXPERIMENTAL DESIGN.  
U. S. Forest Serv. Res. Paper NE-108, 8 p. 1968.  
A99.9 F7622Un

The large amount of variation in sap yield from sugar maple trees precludes efficient use of simple random-sampling designs. Grouping of trees into blocks of pairs on the basis of previous sap yield will reduce the number of samples needed for tests of treatment effects. Pairing or grouping of tapholes on the same tree is also a satisfactory procedure for studies involving taphole treatments.

29060 Hart, A. C., Abbott, H. G., and Ladd, E. R.  
DO SMALL MAMMALS AND BIRDS AFFECT  
REPRODUCTION OF SPRUCE AND FIR? U. S. Forest  
Serv. Res. Paper NE-110, 3 p. 1968. A99.9 F7622Un

Many spruce-fir stands in the Northeast reproduce to fir rather than spruce; small mammal preference for spruce seed have been suggested as one reason for this. A study of spruce-fir reproduction, using various combinations of protection from small mammals and ground-feeding birds, showed on evidence of preferential feeding. Enclosures used in this study may have had an unnatural effect on feeding habits, so further studies are needed to determine the true importance of preferential feeding under natural conditions.

29061 Herrick, O. W., and Morse, J. E.  
INVESTMENT ANALYSES OF STAND IMPROVEMENT, AND REFORESTATION OPPORTUNITIES  
IN APPALACHIAN FORESTS. U. S. Forest Serv. Res.  
Paper NE-111, 43 p. Ref. 1968. A99.9 F7622Un

A study of investment potential for the most common timber-stand-improvement and stand-conversion opportunities on the George Washington National Forest. Gives the expected rates of return on investment for each stand treatment project, based on its value added beyond that available from the untreated stand. Provides a basis for rating and comparing investment opportunities, indicating what kind of projects to favor in planning a stand-treatment program.

29062 Whittaker, J. C.  
LAND LEASING: AN AID TO DEVELOPING  
OUTDOOR RECREATION ENTERPRISES IN INDIANA,  
KENTUCKY, AND OHIO. U. S. Forest Serv. Res. Paper  
NE-113, 12 p. 1968. A99.9 F7622Un

Information about individuals and organizations that lease privately owned land for recreational purposes. Based on a questionnaire survey to find out how and why they leased land.



- 29063 Schroeder, J. G.  
LUMBER GRADE YIELDS FOR SUB-FACTORY  
CLASS RED OAK [QUERCUS RUBRA] LOGS. U. S. Forest  
Serv. Res. Paper NE-114, 15 p. 1968. A99.9 F7622Un
- Lucas, J. T., and Wallin, W. B.
- 29064 THE DEPARTMENT OF DEFENSE MARKET  
FOR WOODEN PALLETS; 1965. U. S. Forest Serv. Res.  
Paper NE-117, 40 p., map. Ref. 1968. A99.9 F7622Un
- Since the early stages of World War II, the  
Department of Defense (DOD) has constituted a large mar-  
ket for many different kinds of wooden pallets. Because  
requirements for palletized shipments to Southeast Asia  
increased substantially in 1965, DOD sometimes found it  
difficult to obtain the kinds and quantities of pallets de-  
sired within a specified time period. This study describes  
the kinds and quantities of pallets needed, when and where  
the pallets are needed, how the pallets are purchased,  
sources of pallet supply, pallet prices, and problems as-  
sociated with selling to DOD.
- 29065 Tarrant, R. F., and others.  
NUTRIENT CYCLING BY THROUGHFALL AND  
STEMFLOW PRECIPITATION IN THREE COASTAL  
OREGON FOREST TYPES. U. S. Forest Serv. Res.  
Paper PNW-54, 7 p. Ref. 1968. A99.9 F7625Uni
- K. C. Lu, W. B. Bollen, and C. S. Chen, joint  
authors.
- Throughfall and stemflow were collected be-  
neath three adjacent forest types—red alder; conifer-  
Douglas-fir, western hemlock, and Sitka spruce; and a  
mixture of alder and conifer. Weight of N and dissolved  
solids in stemflow was insignificant because of small  
amounts of stemflow and soil area affected. Nutrient cycl-  
ing rates differ appreciably between the three forest  
types.
- 29066 Curtis, R. O., Bruce, D., and VanCoeveing, C.  
VOLUME AND TAPER TABLES FOR RED  
ALDER. U. S. Forest Serv. Res. Paper PNW-56, 35 p.  
1968. A99.9 F7625Uni
- New tables for red alder give average upper-  
stem diameters by tree d.b.h. and total height classes,  
and also give corresponding volumes in alternative units  
and for alternative top diameter limits and scaling as-  
sumptions. Equivalent equations for use with computers  
are included.
- 29067 Fahnestock, G. R.  
FIRE HAZARD FROM PRECOMMERCIAL  
THINNING OF PONDEROSA PINE. U. S. Forest Serv.  
Res. Paper PNW-57, 16 p. 1968. A99.9 F7625Uni
- Oregon and Washington.  
Bibliography, p. 16.
- Slash from precommercial thinning of pon-  
derosa pine stands in the Pacific Northwest can be a high  
to-extreme fire hazard for 5 years or longer.
- 29068 Hallin, W. E.  
SOIL MOISTURE TENSION VARIATION ON  
CUTOVERS IN SOUTHWESTERN OREGON. U. S. Forest  
Serv. Res. Paper PNW-58, 18 p., map. 1968.  
A99.9 F7625Uni
- Trees.  
Estimating soil moisture tension from soil  
moisture content, growth, effect of silvicultural treat-  
ment on growth and response, and some positive steps to  
improve success of planting or seeding are presented.
- 29069 Gratkowski, H.  
REPEATED SPRAYING TO CONTROL SOUTH-  
WEST OREGON BRUSH SPECIES. U. S. Forest Serv.  
Res. Paper PNW-59, 6 p. 1968. A99.9 F7625Uni
- Wild-land shrubs differ in susceptibility to  
herbicides, and foresters must know whether one or more  
sprayings will be needed to attain a desired degree of  
brush control. This paper shows degree of kill obtained  
with up to three midsummer spray treatments applied  
with knapsack sprayer on 13 southwest Oregon brush  
species. A comparison with similar aerial spray treat-  
ments indicates the results can be used to prejudge ef-  
fectiveness of aerial spraying.
- 29070 Franklin, J. F.  
CONE PRODUCTION BY UPPER-SLOPE CON-  
IFERS PORTLAND, OREGON, 1968. U. S. Forest Serv.  
Res. Paper PNW-60, 21 p. 1968. A99.9 F7625Uni
- Bibliography, p. 21.
- Cone production by mature noble, Pacific sil-  
ver, subalpine, grand and Shasta red firs, western white  
pine, mountain hemlock, and Engelmann spruce trees has  
been observed annually since 1961. Generally, cones are  
produced by one or more species every year. Significant  
intraspecific differences in cone production between dom-  
inants make selection of the most prolific as leave trees  
important in partial cuttings.
- 29071 Williams, C. B.  
SEASONAL HEIGHT GROWTH OF UPPER-  
SLOPE CONIFERS. U. S. Forest Serv. Res. Paper  
PNW-62, 7 p. Ref. 1968. A99.9 F7625Uni
- Time of bud burst and seasonal distribution of  
height growth were studied for 2 consecutive years on  
eight coniferous species growing in association on two  
upper-slope areas in the Oregon Cascades. At each area,  
significant variations between species and years general-  
ly were found for initiation of bud bursting, length of  
growing season, and 50-, 90-, and 100-percent completion  
of growth. Total height growth seemed to be related to  
length of current growing season, particularly for the  
true firs and mountain hemlock.
- 29072 Krueger, K. W.  
INVESTIGATIONS OF SHINGLE TOW PACKING  
MATERIAL FOR CONIFER SEEDLINGS. U. S. Forest  
Serv. Res. Paper PNW-63, 10 p. Ref. 1968.  
A99.9 F7625Uni
- Thuja plicata.
- Western redcedar shingle tow is used exten-  
sively in forest nurseries to keep seedling roots moist  
during storage and shipment. Chemical compounds found  
in cedar wood, particularly thujaplicins, can depress root  
respiration or kill seedlings. Concentrations up to 120  
p.p.m. thujaplicins have been found in nursery samples of  
tow. Soil on seedling roots can adsorb thujaplicins and  
moderate their influence. A number of factors affect  
availability and uptake and determine whether the net ef-  
fect of shingle tow use will be detrimental or not.
- 29073 Hard, J. S., and Schmiede, D. C.  
THE HEMLOCK SAWFLY [NEODIPRION TSU-  
GAE] IN SOUTHEAST ALASKA. U. S. Forest Serv. Res.  
Paper PNW-65, 11 p., map. 1968. A99.9 F7625Uni
- The hemlock sawfly has one generation per  
year and overwinters in the egg stage. There are approxi-  
mately four feeding male larval instars and five female in-  
stars. Cocoon measurements provide a fairly reliable  
means of sexing sawfly pupae. Females produce an aver-  
age of 72 eggs. Parasites and a fungus disease are the  
most important natural control factors.
- 29074 Binkley, V. W., and Lysons, H. H.  
PLANNING SINGLE-SPAN SKYLINES. U. S.  
Forest Serv. Res. Paper PNW-66, 10 p. 1968.  
A99.9 F7625Uni
- Log transport.  
Single-span skylines require careful and  
thorough planning for successful operation. Criteria are  
presented for selecting areas suitable for skyline logging.  
A procedure is given that describes the steps that must  
be considered by the logging planner, from preliminary  
cutting unit layout to final location of the skyline roads.
- Bruce, D.
- 29075 LITERATURE ON TIMBER MEASUREMENT  
PROBLEMS IN THE DOUGLAS-FIR REGION: A BIBLI-  
OGRAPHY. U. S. Forest Serv. Res. Paper PNW-67, 28 p.  
1968. A99.9 F7625Uni
- This bibliography on timber measurements in-  
cludes publications on the subject of tree or log measure-  
ment in this region. It also includes many publications  
that describe measurement systems or problems else-  
where in the United States and Canada and a few foreign  
publications.
- Barrett, J. W.
- 29076 PRUNING OF PONDEROSA PINE; EFFECT ON  
GROWTH. U. S. Forest Serv. Res. Paper PNW-68, 9 p.  
Ref. 1968. A99.9 F7625Uni
- The ratio of existing crown length to total  
height has an important bearing on the proportion of  
crown length that should be pruned from ponderosa pine.  
Therefore, there is a variable limit to proportion of  
crown length that can be removed and still maintain ac-  
ceptable growth rates. A table is presented that shows  
diameter growth reduction that can be expected from re-  
moving different proportions of live crown length.

29077 Teeguarden, D. E.  
ECONOMICS OF REPLACING YOUNG-GROWTH PONDEROSA PINE [PINUS PONDEROSA] STANDS; A CASE STUDY. U. S. Forest Serv. Res. Paper PSW-47, 16 p. 1968. A99.9 F7652P  
Compares the expected capital value growth of five ponderosa pine stands (70 to 80 years old) on the Challenge Experimental Forest, Yuba County, Calif., with the cost of delaying harvest (defined as sum of stock-holding and land-holding costs). Suggests that replacement of all five stands would be financially desirable under constant stumpage prices. Recommends replacing three stands and holding two—at least until the end of the planning period—assuming that prices will increase 25 percent.

29078 Hawksworth, F. G., Stewart, J. L., and Bailey, W. F.  
YOU CAN SAVE YOUR PINES FROM DWARF MISTLETOE. U. S. Forest Serv. Res. Paper RM-35, 21 p. 1968. A99.9 F7632U

29079 Heidmann, L. J.  
SILVICULTURAL CONTROL OF DWARF MISTLETOE [ARCEUTHOBium VAGINATUM CRYPTOPODUM] IN HEAVILY INFECTED STANDS OF PONDEROSA PINE [PINUS PONDEROSA] IN THE SOUTHWEST. U. S. Forest Serv. Res. Paper RM-36, 11 p. 1968. A99.9 F7632U

Three treatments—limited control by harvest cutting and stand improvement, complete control, and light improvement selection—were tested. Limited control appeared impractical. Silvicultural control of heavy infections required almost complete stand destruction. Because severely opened stands were highly susceptible to windthrow, clearcutting seems indicated.

29080 Lightle, P. C., and Andrews, S. R.  
RED ROT IN RESIDUAL PONDEROSA PINE [PINUS PONDEROSA] STANDS ON THE NAVAJO INDIAN RESERVATION. U. S. Forest Serv. Res. Paper RM-37, 12 p., map. 1968. A99.9 F7632U

Losses from *Polyporus anecephalus*.  
Data from plots located in the Reservation revealed that red rot cull amounted to 15 percent of the gross volume of the virgin stand. Of several factors studied, tree age was most significant. Bark color in the lower trunk was a better criterion of red rot cull than broad age classes based on actual or estimated ages. The current system of marking removed 48 percent of the gross volume and 68 percent of the red rot volume. Alternate methods of marking are discussed.

29081 Van Deusen, J. L.  
PERIODIC GROWTH OF POLE-SIZED PONDEROSA PINE [PINUS PONDEROSA] AS RELATED TO THINNING AND SELECTED ENVIRONMENTAL FACTORS. U. S. Forest Serv. Res. Paper RM-38, 12 p. Ref. 1968. A99.9 F7632U

Diameter growth began earlier in thinned stands and proceeded more rapidly than in unthinned stands. The length of the height growth season averaged about the same for trees in the two stands, but the thinned trees grew a little faster. Beginning or ending of tree growth could not be consistently related to air temperature of calculated degree days. There was, however, a distinct relationship between precipitation and diameter fluctuations for trees growing under a moisture stress.

29082 Stelzer, M. J.  
THE GREAT BASIN TENT CATERPILLAR IN NEW MEXICO: LIFE HISTORY, PARASITES, DISEASE, AND DEFOLIATION. U. S. Forest Serv. Res. Paper RM-39, 16 p. Ref. 1968. A99.9 F7632U

*Malacosoma fragile* (Stretch) is epidemic periodically in quaking aspen stands of northern New Mexico. Heavy defoliation for 3 consecutive years decreased annual ring width 75 percent; percentage of dead trees increased from 20 to 70, and almost all survivors had dead tops and branches. Larvae begin to hatch in late May, and feed for 30-42 days (five instars). Eggs are laid from mid-July to early August in masses of up to 250. First-instar larvae pass the winter within the egg chorion. Two species of predators and 49 parasites have been identified in New Mexico and Arizona.

29083 Pase, C. P., and Johnson, R. R.  
FLORA AND VEGETATION OF THE SIERRA ANCHA EXPERIMENTAL FOREST, ARIZONA. U. S. Forest Serv. Res. Paper RM-41, 19 p., map. Ref. 1968. A99.9 F7632U

Myers, C. A.  
29084 SIMULATING THE MANAGEMENT OF EVEN-AGED TIMBER STANDS. U. S. Forest Serv. Res. Paper RM-42, 32 p. 1968. A99.9 F7632U

Presents a computer program, written in Fortran IV, for simulation of the management of even-aged timber stands. Changes computed include tree growth, harvest cuts, periodic thinning, and catastrophic losses. Annual costs and returns are summarized in various statements of money value.

Myers, C. A., and Godsey, G. L.  
29085 RAPID COMPUTATION OF YIELD TABLES FOR MANAGED, EVEN-AGED TIMBER STANDS. U. S. Forest Serv. Res. Paper RM-43, 16 p. 1968. A99.9 F7632U

Sets of yield tables that show probable results of various management alternatives can be valuable tools for decision making, especially when they can be made available quickly and at relatively low cost. Such tables can be obtained with data from temporary plots and the computer programs presented.

James, G. A., and Henley, R. K.  
29086 SAMPLING PROCEDURES FOR ESTIMATING MASS AND DISPERSED TYPES OF RECREATION USE ON LARGE AREAS. U. S. Forest Serv. Res. Paper SE-31, 15 p., map. Mar. 1968. A99.9 F7623U

A pilot test was successfully employed during summer 1966 to estimate mass and dispersed types of recreation use on the Pacific District, Eldorado National Forest in California. Use was sampled using a stratified random-sampling technique which incorporated road checkpoints at which existing recreationists were interviewed to obtain information concerning length of stay and recreational activities pursued. The Pacific District received almost 195,000 visitor-days of recreation use during the 101-day sampling period.

Hough, W. A.  
29087 FUEL CONSUMPTION AND FIRE BEHAVIOR OF HAZARD REDUCTION BURNS. U. S. Forest Serv. Res. Paper SE-36, 7 p. June 1968. A99.9 F7623U

Fuel consumption and fire behavior of hazard reduction burns in slash-longleaf pine stands unburned for at least 10 years were evaluated under various environmental conditions during three winter seasons. Rate of spread of backfires was found to be inversely related to moisture content of the fresh litter layer and to relative humidity. Moisture content of the fresh litter was influenced by relative humidity and days since measurable rain and could be predicted from their values. Reduction of litter fuel and release of available fuel energy were found to be predictable from moisture content and dry weight values of the total litter layer.

Schroeder, J. G., Campbell, R. A., and Rodenbach, R. C.  
29088 SOUTHERN PINE LOG GRADES FOR YARD AND STRUCTURAL LUMBER. U. S. Forest Serv. Res. Paper SE-39, 9 p., map. Sept. 1968. A99.9 F7623U

This paper presents the Forest Service standard log grades for southern pine. They were developed from analysis of tree grade data and replace the previously used knot-count grades. The log grades are applicable to loblolly, shortleaf, pond, longleaf, and slash pine logs that will be sawed into standard yard and structural lumber.

Schroeder, J. G., Campbell, R. A., and Rodenbach, R. C.  
29089 SOUTHERN PINE TREE GRADES FOR YARD AND STRUCTURAL LUMBER. U. S. Forest Serv. Res. Paper SE-40, 15 p. Sept. 1968. A99.9 F7623U

This paper presents the Forest Service standard tree grades for southern pine, developed on the basis of lumber recovery studies conducted throughout the South. The grades are applicable to loblolly, shortleaf, pond, longleaf, and slash pine trees that will be sawed into standard yard and structural lumber.

Yandle, D. O.  
29090 SOUTHERN YELLOW PINE TREE OVERRUNS AND LUMBER WIDTH DISTRIBUTIONS. U. S. Forest Serv. Res. Paper SE-41, 12 p. Sept. 1968. A99.9 F7623U

This paper presents tree overruns and the distribution of rough-green lumber, by lumber grades and board widths, from trees graded by the Forest Service standard tree grades for southern pine. The data were collected from southwide lumber recovery studies that utilized loblolly, shortleaf, pond, longleaf, and slash pine trees that were manufactured into standard yard and structural lumber.



- 29091 Russell, T. E., and Mignery, A. L.  
DIRECT-SEEDING PINE IN TENNESSEE'S  
HIGHLANDS. U. S. Forest Serv. Res. Paper SO-31,22 p.  
Ref. 1968. A99.9 F7628Us
- A series of studies show that pine direct-seeding is feasible in Tennessee. Mineral soil seedbeds must be kept free of hardwood leaves, and competing vegetation must be controlled.
- 29092 Anderson, W. C.  
FACTORS INFLUENCING NORTH CAROLINA  
LANDOWNERS TO PRACTICE FORESTRY. U. S. Forest  
Serv. Res. Paper SO-33,18 p. 1968. A99.9 F7628Us
- Among private, nonindustrial owners, holders of sharetenant farms were most inclined to plant trees and thin their woodlands. Other owners holding farms they did not personally operate tended to thin rather than to plant. Owners who planted were chiefly those with idle farms. In their selection of practices, most owners were guided by economic objectives.
- 29093 Schaeffer, R. E.  
GLUING FIRE-RETARDANT-TREATED  
DOUGLAS-FIR AND WESTERN HEMLOCK. U. S. Forest  
Serv. Res. Note FPL-0160,13 p. Ref. Nov. 1968.  
A99.9 F7634Un
- Ammonium sulfate, zinc chloride, boric acid, and sodium dichromate—components of the American Wood-Preservers' Association Type D fire retardant—were found to affect the rate of gelation of a resorcinol-resin adhesive. Boric acid retarded the rate of gelation, whereas the other components of the fire-retardant mixture increased the rate of gelation.
- In block-shear evaluations, the specimens made with resorcinol-resin glues from joints of either treated Douglas-fir or western hemlock yielded lower quality joints than did similar untreated specimens.
- 29094 Schaffer, E. L.  
A SIMPLIFIED TEST FOR ADHESIVE BE-  
HAVIOR IN WOOD SECTIONS EXPOSED TO FIRE. U. S.  
Forest Serv. Res. Note FPL-0175,12 p. Nov. 1968.  
A99.9 F7634Un
- A relatively simple test procedure was developed to evaluate the behavior of various adhesives near fire-exposed surfaces in laminated constructions. A number of sections cut from laminated blocks were exposed to fire on one surface. After this exposure, the sections were transversely cut, and the gluelines were examined for separation depth. In addition, the cool specimens were broken along the glue joints so as to be able to determine the residual bonded area. An equation incorporating both the separation depth and the residual bonded area on the joints was utilized to obtain a "degradation index" on which adhesive behavior near fire-exposed surfaces can be quantitatively based. This index was used to make a preliminary grouping of the behavior under fire of six types of adhesives in laminated sections of Douglas-fir and southern pine.
- 29095 Pronin, D., and Vaughan, C. L.  
A LITERATURE SURVEY OF POPULUS  
SPECIES WITH EMPHASIS ON P. TREMULOIDES. U. S.  
Forest Serv. Res. Note FPL-0180,67 p. Aug. 1968.  
A99.9 F7634Un
- This revised bibliography reflects the amount of interest in the Populus species shown by the large number of publications issued on the subject, particularly in the last two years. References are grouped under broad subject matter headings and arranged alphabetically by author within each group to facilitate use.
- 29096 Munthe, B. P., and Ethington, R. L.  
METHOD FOR EVALUATING SHEAR PROP-  
ERTIES OF WOOD. U. S. Forest Serv. Res. Note  
FPL-0195,8 p. June 1968. A99.9 F7634Un
- Wisconsin University, cooperating.
- A test procedure is described for determining the shear properties of wood where the shear stress is in radial or tangential planes. If the shear force is across the grain, it is often termed "rolling" because of the tendency for the shearing forces to roll the wood fibers. The Specimen is not difficult to fabricate, and test gives a state of almost pure shear. Values for rolling shear properties for the pieces tested were 10 to 20 percent of the values for the same properties from tests with a longitudinal shear force in the longitudinal-tangential plane. Components of variance associated with the tests of closely matched specimens are given.
- Rolling shear properties are particularly important for selected plywood applications, such as for box beams or for gusset plates. Successful design requires a better understanding and appreciation of the nature of rolling shear.
- 29097 Simpson, W. T., and Skaar, C.  
EFFECT OF RESTRAINED SWELLING ON  
WOOD MOISTURE CONTENT. U. S. Forest Serv. Res.  
Note FPL-0196,3 p. July 1968. A99.9 F7634Un
- Tests with Quercus.
- Swelling stresses are responsible for many of the defects that occur in wood and wood products during the drying process and in end-use situations. A rational approach to reducing these defects depends on a knowledge of the swelling stresses and the factors that affect them. Maximum swelling pressure and the time required to reach the maximum swelling pressure are shown dependent on the size of the sorption increment, on the temperature, and on the direction of restraint. It is shown that the equilibrium moisture content of wood restrained from swelling is lower than that of wood unrestrained from swelling. With a knowledge of the swelling stresses and the mechanical properties of the wood and wood products involved it may be possible to design more effective drying processes and to secure better performance for end products.
- 29098 Jokerst, R. W.  
LONG TERM DURABILITY OF LABORATORY-  
MADE DOUGLAS-FIR FLAKEBOARD. U. S. Forest Serv.  
Res. Note FPL-0199,14 p. July 1968. A99.9 F7634Un
- An evaluation of the performance of eight types of Douglas-fir flakeboards exposed to laboratory-controlled and outdoor conditions.
- 29099 Kurtenacker, R. S., and Godshall, W. D.  
PERFORMANCE OF NAILER CLEATS IN  
BLOCKING AND BRACING APPLICATIONS. U. S. Forest  
Serv. Res. Note FPL-0200,5 p. Aug. 1968.  
A99.9 F7634Un
- Design criteria were developed for various combinations of nails, cleats and floorboards for one species of wood in a simulated railcar switching environment. The study establishes the resistance of nailed cleats to rapidly applied lateral forces comparable to published levels of shock to which railcars are subjected in switching.
- 29100 Levitan, J.  
SHOULD LOG SCALE BE REDUCED FOR  
KNOTS? U. S. Forest Serv. Res. Note PNW-73,14 p.  
Jan. 1968. A99.9 F7625U
- Conclusion, p.13.
- 29101 Franklin, J. F., and Hoffman, J.  
TWO TESTS OF WHITE PINE [PINUS MONTI-  
COLA], TRUE FIR [ABIES], AND DOUGLAS-FIR [PSEU-  
DOTSUGA MENZIESII] SEEDSPOTTING IN THE CAS-  
CADE RANGE. U. S. Forest Serv. Res. Note PNW-80,  
11 p. May 1968. A99.9 F7625U
- Satisfactory stocking was obtained on seed-spots protected by wire screens but generally not on unscreened spots despite extensive baiting of study areas. Western white pine was most successful species used and true firs were least successful. Damping-off, rodents, and insects were responsible for most seedling mortality.
- 29102 Beckwith, R. C.  
THE LARGE ASPEN TORTRIX, CHORISTONE-  
URA CONFLICTANA (WLKR.), IN INTERIOR ALASKA.  
U. S. Forest Serv. Res. Note PNW-81,10 p.,map. July  
1968. A99.9 F7625U
- The large aspen tortrix caused extensive defoliation in interior Alaska during 1966 and 1967. Studies showed its life history to be similar to that reported from Canada. Overwintering larvae became active in early May and completed their development by early July. Natural mortality is discussed with emphasis on the effect of larval starvation on survival and egg production.
- 29103 Cochran, P. H.  
CAN THINNING SLASH CAUSE A NITROGEN  
DEFICIENCY IN PUMICE SOILS OF CENTRAL OREGON?  
U. S. Forest Serv. Res. Note PNW-82,11 p. July 1968.  
A99.9 F7625U
- Pinus contorta and P. ponderosa.
- Decomposition of thinning slash deposited on the soil surface should have no direct adverse effect on the soil nitrogen available to higher plants in the pumice soil region. Decomposition of roots of cut trees would immobilize nitrogen in the soil immediately adjacent to the root during the decomposition period, which appears to be short for the smaller roots. However, these dead roots no longer compete for soil nitrogen in unexploited soil zones. Thus, nitrogen available for individual trees may be increased by thinning. If chipped slash is mechanically incorporated into the soil, a temporary nitrogen deficiency is likely, particularly in nonpumice soils. This deficiency can be prevented by fertilization.



29104 Crouch, G. L.  
SPRING-SEASON DEER BROWSING OF DOUGLAS-FIR ON THE CAPITOL FOREST IN WESTERN WASHINGTON. U. S. Forest Serv. Res. Note PNW-84, 8 p. Aug. 1968. A99.9 F7625U

Deer started browsing Douglas-fir shortly after bud burst began and continued browsing for about 1 month. Douglas-fir was eaten despite abundant new growth on many plant species that deer prefer in late spring and early summer. The beginning and ending of tree browsing did not seem to be related to any visual growth-stage characteristic except bud burst. Leaders were growing rapidly when browsing began and ended. Availability of other vegetation in similar stages of development also appeared unrelated to Douglas-fir browsing.

29105 Binkley, V. W., and Carson, W. W.  
AN OPERATIONAL TEST OF A NATURAL-SHAPED LOGGING BALLOON. U. S. Forest Serv. Res. Note PNW-87, 8 p., map. Sept. 1968. A99.9 F7625U

A three-month test was performed to evaluate a natural-shaped balloon under logging conditions, near Reedsport, Oregon. Data were collected on the balloon's availability, maintenance records, handling requirements, and yarding performance. The balloon was found to be stable and operable in winds up to 25 m.p.h. and capable of surviving storms when properly bedded down.

29106 Nelson, E. E.  
SURVIVAL OF *PORIA WEIRII* IN CONIFER, ALDER [ALNUS], AND MIXED CONIFER-ALDER STANDS. U. S. Forest Serv. Res. Note PNW-83, 5 p. July 1968. A99.9 F7625U

Cubes of Douglas-fir heartwood naturally infected with *Poria weirii* were buried for up to 18 months in soil beneath stands of conifers, alder, and mixed alder and conifers. Survival of the fungus under the pure conifer stand was better than under either of the alder-containing stands. It is proposed that lower survival in alder soils is due to high levels of nitrate nitrogen. Many fungi, bacteria, and Actinomycetes competing with *P. weirii* for soil nutrients are able to use this form of nitrogen while *P. weirii* cannot. This difference in physiologies could be a major reason for higher mortality of *P. weirii* in alder soils.

29107 Folkman, W. S., McLaren, R. J., and Christiansen, J. R.  
PUBLIC RESPONSIBILITY FOR NATURAL RESOURCES: ATTITUDES OF UTAH COUNTY, UTAH RESIDENTS. U. S. Forest Serv. Res. Note PSW-165, 8 p. 1968. A99.9 F7652

Attitudes of responsibility for natural resources were related to certain population characteristics. Social class was not a significant determinant, but age, marital status, length and location of residence, and awareness of forest problems were related to concern for negligence and vandalism. Sex, personal experience with forest fire fighting, attitude toward agency, frequency of use, and awareness of forest problems were related to action response.

29108 Skolmen, R. G.  
NATURAL DURABILITY OF SOME WOODS USED IN HAWAII: PRELIMINARY FINDINGS. U. S. Forest Serv. Res. Note PSW-167, 7 p. 1968. A99.9 F7652

29109 Wert, S. L., and Wickman, B. E.

WHITE FIR [*ABIES CONCOLOR*] STANDS KILLED BY TUSSOCK MOTH [*HEMEROCAMPA PSEUDOSUGATA*]: 70-MM. COLOR PHOTOGRAPHY AIDS DETECTION. U. S. Forest Serv. Res. Note PSW-168, 5 p. 1968. A99.9 F7652

The use of large-scale 70-mm. aerial photography proved to be an effective technique for detecting trees in white fir stands killed by Douglas-fir tussock moth in northeastern California. Correlations between ground and photo estimates of dead trees were high. But correlations between such estimates of lesser degrees of tree damage—thin tops and topkill—were much lower; increased training of interpreters could improve these correlations.

29110 Folkman, W. S.  
FOLLOW-UP EVALUATION OF FIRE HAZARD INSPECTION PROCEDURES, BUTTE COUNTY, CALIFORNIA. U. S. Forest Serv. Res. Note PSW-169, 5 p. 1968. A99.9 F7652

A study made in 1966 in Butte County, Calif., to assess the effectiveness of fire hazard inspection procedures was repeated in 1967. Purpose of the inspections is to secure compliance with fire safety requirements. The observed drop in number of violations suggests a carryover effect in 1967 from the first study. In many cases, personal contact was still necessary to secure conformance—despite exposure to the program in 1966; in some cases, more than one contact proved to be necessary.

29111 Krugman, S. L., and Littlefield, J. F.  
A USEFUL SINGLE-SOLUTION POLYCHROME STAIN FOR PLANT MATERIAL; BROOK CYTE-CHROME. U. S. Forest Serv. Res. Note PSW-170, 4 p. 1968. A99.9 F7652

Chiefly trees and fungi.  
Fresh and chemically fixed sectioned plant material can be quickly stained by applying a Brook Cyte-Chrome I polychrome stain. Staining time averaged only about 10 minutes. And exact timing of staining and destaining is not as critical as with most of the commonly used stains. The over-all quality is comparable to that of the traditional stains.

29112 Gordon, D. T.  
TREE SHADOW PATTERNS AND ILLUMINATION MEASUREMENTS, WITHIN CLEARCUT STRIPS AND IRREGULAR OPENINGS IN A TRUE FIR FOREST. U. S. Forest Serv. Res. Note PSW-172, 9 p. 1968. A99.9 F7652

Daily progression of shadows cast by red and white fir trees in forest stand openings is illustrated by vertical aerial photographs made on the summer solstice at 2-hour intervals from 7 a.m. to 5 p.m. The aerial photos show shade patterns in three irregularly-shaped, natural stand openings and two different widths (3-chains and 5-chains) of clearcut strips. Illumination measurements are reported to aid interpretation of shadow patterns.

29113 Lyon, R. L., Page, M., and Brown, S. J.  
TOLERANCE OF SPRUCE BUDWORM [*CHORISTONEURA OCCIDENTALIS*] TO MALATHION: MONTANA, NEW MEXICO POPULATIONS SHOW NO DIFFERENCES. U. S. Forest Serv. Res. Note PSW-173, 6 p. Ref. 1968. A99.9 F7652

In pest control operations by the U.S. Forest Service using malathion sprays, nearly twice as many spruce budworms were killed in Montana as in New Mexico. To find out if budworms in New Mexico had greater tolerance to the insecticide, malathion was applied by topical and aerosol treatments in the laboratory to 6th-instar populations from the two States. No differences in susceptibility of the insects to malathion were found.

29114 Aldon, E. F., and Garcia, G.  
SUMMER DEFERRED SEMIDESERT RANGES. U. S. Forest Serv. Res. Note RM-95, 3 p. 1967. A99.9 F7632Us

Sporobolus airoides grazed by beef cattle.  
Research in west-central New Mexico showed alkali saccaton on flood plains offers management its best change for increasing productivity of semidesert lands. It is highly palatable, and can produce much herbage on a relatively small area. Under summer-deferred grazing, production of alkali saccaton has been gradually increasing in spite of variable precipitation.

29115 Pase, C. E., and Thilenius, J. F.  
COMPOSITION, PRODUCTION, AND SITE FACTORS OF SOME GRASSLANDS IN THE BLACK HILLS OF SOUTH DAKOTA. U. S. Forest Serv. Res. Note RM-103, 7 p. Ref. 1968. A99.9 F7632Us

Two major grassland types were found, bluegrass and mixed prairie. On the prairie type, total herbage and grass production were greater on ungrazed than on grazed range; little difference was apparent on the bluegrass type. Moisture regime appears to be an important single factor in determining which type occurs on a given site—more moist sites are dominated by bluegrasses; the drier sites by prairie vegetation.

29116 Kennedy, P. C.  
INSECTS AND DISEASES OF SIBERIAN PEA SHRUB [*CARAGANA [ARBORESCENS]*] IN NORTH DAKOTA, AND THEIR CONTROL. U. S. Forest Serv. Res. Note RM-104, 4 p. 1968. A99.9 F7632Us

Grasshoppers do most damage. Malathion is recommended to control most insects; Bordeaux mixture for Septoria leaf spot.

- 29117 Baldwin, P. H.  
WOODPECKER FEEDING ON ENGELMANN  
SPRUCE BEETLE IN WINDTHROWN TREES. U. S. For-  
est Serv. Res. Note RM-105,4 p. 1968. A99.9 F7632Us  
Northern three-toed and hairy woodpeckers fed  
at windthrown Engelmann spruce trees infested with  
*Dendroctonus obscurus* (Mann.). Sections of the infested  
boles were covered with screen to prevent woodpecker  
feeding over the winter and following summer. Estimates  
at the end of that time showed that woodpeckers caused  
a relative mortality of 70 to 79 percent of the brood.  
Predation on the Engelmann spruce beetle in windthrown  
trees appears to be important in declining infestations.
- 29118 Hawksworth, F. G.  
PONDEROSA PINE [PINUS PONDEROSA]  
DWARF MISTLETOE [ARCEUTHOBium VAGINATUM  
CRYPTOPODUM] IN RELATION TO TOPOGRAPHY AND  
SOILS ON THE MANITOU EXPERIMENTAL FOREST,  
COLORADO. U. S. Forest Serv. Res. Note RM-107,4 p.  
1968. A99.9 F7632Us  
The marked variations in frequency of dwarf  
mistletoe found on three soil types studied (granitic,  
limestone, and arkose) apparently were related to varia-  
tion in slope steepness, with frequency highest on areas  
with gentle slopes. Stands on soils with a high proportion  
of gentle slopes (for example, arkose) had the most dwarf  
mistletoe; those on predominately steep slopes (for exam-  
ple, granite) had much less infection.
- 29119 Campbell, R. E.  
PRODUCTION CAPABILITIES OF SOME UP-  
PER RIO PUERCO SOILS OF NEW MEXICO. U. S. For-  
est Serv. Res. Note RM-108,7 p. 1968. A99.9 F7632Us  
Tests for fertility with barley.  
Variability of plant cover within short dis-  
tances is due primarily to availability of water. Even  
though the eight soils sampled varied from native to  
cultivated lands, from fine sands to firm clays, and from  
river bottoms to high plateaus, they were normal in  
moisture-holding capacity, pH, and other physical and  
chemical characteristics.
- 29120 Aldon, E. F.  
DETRIMENTAL EFFECT OF RUSSIAN-THIS-  
TLE [SAISOLA KALI] ON SEMIDESERT RANGE IN  
WEST-CENTRAL NEW MEXICO. U. S. Forest Serv. Res.  
Note RM-109,2 p. 1968. A99.9 F7632Us  
Ground cover of perennial grasses declined  
seriously under plots covered overwinter with dead  
thistle plants.
- 29121 Bergen, J. D.  
SOME OBSERVATIONS ON TEMPERATURE  
PROFILES OF A MOUNTAIN SNOW COVER. U. S. For-  
est Serv. Res. Note RM-110,7 p. map. 1968.  
A99.9 F7632Us  
Measurements of the vertical temperature dis-  
tribution in an annual mountain snow cover are discussed  
in terms of a simple model of the vertical temperature  
profile. The parameters describing this model are com-  
pared for measurements made for 2 winters. Day-to-day  
variation is found to be larger for these parameters than  
the 2 winters.
- 29122 Springfield, H. W.  
AGE AND YEAR OF COLLECTION AFFECT  
GERMINATION OF WINTERFAT [EUROTIA LANATA]  
SEEDS. U. S. Forest Serv. Res. Note RM-112,2 p. 1968.  
A99.9 F7632Us  
One- and two-year-old seeds germinated better  
than older seeds; nevertheless, seeds 4, 5, and 6 years  
old produced a fair number of seedlings, especially at  
temperatures of 43°F. and 57°F. Retention of viability ap-  
pears to be influenced by the year the seeds were collect-  
ed.
- 29123 Jameson, D. A.  
SPECIES INTERACTIONS OF GROWTH IN-  
HIBITORS IN NATIVE PLANTS OF NORTHERN ARIZO-  
NA. U. S. Forest Serv. Res. Note RM-113,2 p. 1968.  
A99.9 F7632Us  
Extracts of most plants contain materials that  
inhibit the growth of seedlings, but the effect of inhibitors  
from different species varies with the test seedlings used.  
These interactions demonstrated in the laboratory may  
also be important in interspecific relationships in the  
field.
- 29124 Patton, D. R., and others.  
A TRANSMITTER FOR TRACKING WILDLIFE.  
U. S. Forest Serv. Res. Note RM-114,4 p. 1968.  
A99.9 F7632Us  
R. T. Dickie, E. L. Boeker, and V. E. Scott,  
joint authors.  
Schematics are presented for a transmitter  
with an amplifier stage to increase receiving distance.  
Weight of the transmitter with one battery is 2 ounces,  
maximum battery life is 45 days, and maximum receiving  
distance is 2-1/2 miles.
- 29125 Davis, J. R., Ffolliott, P. F., and Clary, W. P.  
A FIRE PRESCRIPTION FOR CONSUMING  
PONDEROSA PINE DUFF. U. S. Forest Serv. Res. Note  
RM-115,4 p. 1968. A99.9 F7632Us  
A "hot" prescribed fire was set in October  
1964 to burn a specific quantity of litter in ponderosa  
pine. This objective was accomplished; other effects,  
which may be beneficial under some circumstances, in-  
cluded thinning of the overstory from below, increased  
seedling germination, and temporary reduction of fire  
hazard. Forage and browse were not benefited.
- 29126 Sorensen, R. W.  
SIZE OF ASPEN [POPULUS TREMULOIDES]  
CROP TREES LITTLE AFFECTED BY INITIAL SUCKER  
DENSITY. U. S. Forest Serv. Res. Note NC-51,4 p.  
1968. asD11.A33  
Size of aspen crop trees at age 15 years is  
essentially the same for a wide range of initial sucker  
densities. High densities are not necessary to produce  
adequately stocked stands.
- 29127 Phelps, W. R., and Weber, R.  
ANTIBIOTICS DO NOT CONTROL BLISTER  
RUST IN EASTERN WHITE PINE [PINUS STROBUS]  
SEEDLINGS. U. S. Forest Serv. Res. Note NC-52,3 p.  
1968. asD11.A33  
Caused by Cronartium ribicola.  
To prevent blister rust infections in Eastern  
white pine seedlings, the antibiotics, cycloheximide  
(Acti-dione) and Phytoactin, were tested in root dips,  
root slurries, and foliar drenches before planting and  
after planting the trees. None of the methods and materi-  
als tested was effective.
- 29128 Mattson, W. J.  
THE IMPACT OF INSECTS ON SECOND-YEAR  
CONE CROPS IN RED PINE [PINUS RESINOSA] SEED-  
PRODUCTION AREAS. U. S. Forest Serv. Res. Note NC-  
53,2 p. 1968. asD11.A33  
Second-year cone crops in red pine seed-pro-  
duction areas have been severely damaged by five species  
of insects. Control of the two most destructive pests  
could increase present seed yields in most areas by at  
least 50 percent. Some seed-production areas may not  
produce harvestable seed crops until cone-insect popula-  
tions are suppressed.
- 29129 Erickson, J. R.  
BARK SEPARATION DURING CHIPPING WITH  
A PARALLEL KNIFE CHIPPER. U. S. Forest Serv. Res.  
Note NC-54,3 p. 1968. asD11.A33  
Five winter-cut northern species were chipped  
in a frozen and unfrozen condition with a parallel knife  
chipper. The degree of bark separation during chipping  
and a relative gradation of chip size are reported.
- 29130 Fobes, E. W., and Rowe, R. W.  
MARKETING PRACTICES OF NORTHERN  
MINNESOTA SAWMILLS. U. S. Forest Serv. Res. Note  
NC-55,3 p. map. 1968. asD11.A33  
Most of the lumber produced in northern Min-  
nesota is marketed in Minnesota, and the marketing area  
increases as mill size increases. Aspen is a dominant  
species. About 45 percent of the lumber is graded; con-  
centration and grading would improve marketing. Less  
than one-third of the by-products are marketed.
- 29131 Jennings, D. T.  
USING BLACK LIGHT TO FIND JACK-PINE  
BUDWORM [CHORISTONEURA PINUS] EGG MASSES.  
U. S. Forest Serv. Res. Note NC-56,3 p. 1968.  
asD11.A33  
Jack pine foliage infested with jack-pine bud-  
worm egg masses was examined under two kinds of light—  
black light and a combination of natural and fluorescent  
light. Black light significantly increased the accuracy of  
count but not the efficiency of examination.



- 29132 Ostrom, A. J.  
TIMBER VOLUME IN INDIANA, 1967. U. S. Forest Serv. Res. Note NC-58,4 p.,map. 1968. asD11.A33  
The recently completed Second Forest Survey of Indiana shows that the State's timber volume has increased by one-fourth in the 17 years since the previous survey. Timber volume by county is presented.
- 29133 Essex, B. L.  
FOREST LAND IN INDIANA COUNTIES, 1967. U. S. Forest Serv. Res. Note NC-57,4 p.,map. 1968. asD11.A33  
Commercial forest land has declined slightly from 4.1 million acres in 1950 to 3.9 million acres in 1967. The more heavily forested counties are in the southern half of the State where forest land has been increasing.
- 29134 Blyth, J. E.  
LAKE STATES PULPWOOD PRODUCTION DROPS SEVEN PERCENT, 1967. U. S. Forest Serv. Res. Note NC-59,3 p. 1968. asD11.A33  
This twenty-second annual report shows the Lake States pulpwood harvest decreased to about 4 million cords from a record high of 41/4 million cords in 1966. Pulpwood receipts remained high in Wisconsin but decreased in Michigan and Minnesota. Minnesota shipped 106,000 cords more to Wisconsin than in 1966. As a result, only Minnesota's 1967 pulpwood production was higher than the previous year.
- 29135 Solomon, D. S.  
APPLYING SITE-INDEX CURVES TO NORTHERN HARDWOODS IN NEW HAMPSHIRE. U. S. Forest Serv. Res. Note NE-79,5 p. 1968. A99.9 F7622U  
Describes a new method for testing site-index curves. Study results indicate that Vermont site-index curves for yellow birch, paper birch, white ash, and sugar maple, and New York-Connecticut curves for red maple, can be applied satisfactorily in New Hampshire when used with certain precautions and corrections.
- 29136 Frayer, W. E.  
A COMPUTER PROGRAM FOR MAKING S-CONTRASTS INVOLVING LINEAR COMBINATIONS OF GROUP MEANS. U. S. Forest Serv. Res. Note NE-80,6 p. 1968. A99.9 F7622U  
A description of a FORTRAN IV computer program that is used for making Scheffé's S-contrasts in one-way analyses.
- 29137 Ostrander, M. D.  
AMENDMENT TO "GUIDE TO HARDWOOD LOG GRADING," REVISED 1965. U. S. Forest Serv. Res. Note NE-81,2 p. 1968. A99.9 F7622U  
Amendment to "A guide to hardwood log gradings," a teaching aid and field reference first published in 1963 and revised in 1965. Amends only the section on epicormic or adventitious bud clusters.
- 29138 Little, S., and Somes, H. A.  
HERBICIDE TREATMENTS OF JAPANESE HONEYSUCKLE FOR RELEASING DESIRABLE REPRODUCTION OR FOR SITE PREPARATION. U. S. Forest Serv. Res. Note NE-83,8 p. 1968. A99.9 F7622U  
Various herbicides were used to release pine or hardwood seedlings from competition of Japanese honeysuckle, or to eliminate honeysuckle in areas being prepared for regeneration. Considering both the degree of honeysuckle control and the amount of damage to desired trees, we recommend 2,4-D emulsifiable acid with application in late fall for release of hardwoods and in late summer or early fall for release of pines. A mixture of 2,4-D-picolinic acid applied during spring or early summer is recommended as a conditioning treatment to prepare an area for new regeneration.
- 29139 Shigo, A. L., and Kilham, L.  
SAPSUCKERS [SPHYRAPICUS VARIUS] AND FOMES IGNIARIUS VAR. POPULINUS. U. S. Forest Serv. Res. Note NE-84,2 p. 1968. A99.9 F7622U  
In aspen trees infected by *Fomes igniarius* var. *populinus*, the thin shell of sound wood enclosing the central column of decayed wood offers an ideal place for sap-suckers to peck out nests.
- 29140 Leak, W. B.  
BIRCH REGENERATION; A STOCHASTIC MODEL. U. S. Forest Serv. Res. Note NE-85,7 p. 1968. A99.9 F7622U  
The regeneration of a clearcutting with paper or yellow birch is expressed as an elementary stochastic (probabilistic) model that is computationally similar to an absorbing Markov chain. In the general case, the model contains 29 states beginning with the development of a flower (ament) and terminating with the abortion of a flower or seed, or the development of an acceptable stem, unacceptable stem, dead seedling, or nongerminate (the six absorbing states). Expressions are given for the expected mean number of occurrences of each state, and the probability of arriving at any absorbing state after
- 29141 Czuhai, E., and Cushwa, C. T.  
A RESUME OF PRESCRIBED BURNINGS ON THE PIEDMONT NATIONAL WILDLIFE REFUGE (GEORGIA). U. S. Forest Serv. Res. Note SE-86,4 p. Feb. 1968. A99.9 F7623Un  
Information concerning the effects of prescribed burning on wildlife habitat in the Atlantic Piedmont is meager. Much information on this topic was in unpublished quarterly reports written by Piedmont Wildlife Refuge managers. This information has been summarized and presented chronologically.
- 29142 Meskimen, G.  
MINIATURE SOIL AUGER FOR POT SAMPLING. U. S. Forest Serv. Res. Note SE-88,2 p. Feb. 1968. A99.9 F7623Un  
A carpenter's ship auger makes an efficient tool for sampling the soil in pots. The auger minimizes the size of sampling holes and is unhampered by large soil particles.
- 29143 Olson, D. F.  
EARLY SURVIVAL AND GROWTH OF PLANTED NORTHERN RED OAK IN THE SOUTHERN APPALACHIANS. U. S. Forest Serv. Res. Note SE-89,3 p. Mar. 1968. A99.9 F7623Un  
This paper presents 2-year survival and growth data for six northern red oak plantings, each containing three morphological seedling grades, over a range of site indexes from 76 to 98 feet at age 50.  
Seedling survival averaged 94 percent, with no important differences due to seedling grade or site index. Height growth has averaged only 3 inches a year. There has been no significant growth difference between grades, but seedlings on site 76 land grew less than those on the five sites with higher site index.
- 29144 Russell, T. E.  
TESTS OF REPELLENTS FOR DIRECT-SEEDING BLACK WALNUTS [JUGLANS NIGRA] IN TENNESSEE. U. S. Forest Serv. Res. Note SO-73,4 p. 1968. A99.9 F7628U  
Chemical protection from wildlife.
- 29145 Craul, P. J.  
LONGLEAF PINE [PINUS PALUSTRIS] SITE INDEX POORLY CORRELATED WITH SOIL TYPE IN SOUTHERN ALABAMA. U. S. Forest Serv. Res. Note SO-74,2 p. 1968. A99.9 F7628U  
On a 3,000-acre area, variation of site index within nine soil types was so large that differences in the means by soil type were significant only for the two extremes.
- 29146 Kearney, N. S., and Bonner, F. T.  
SWEETGUM [LIQUIDAMBAR STYRACIFLUA] SEED PRODUCTION ON SOILS IN CENTRAL MISSISSIPPI. U. S. Forest Serv. Res. Note SO-75,2 p.,map. 1968. A99.9 F7628U  
During 1965 and 1966, sweetgum trees on Delta sites produced more seed than trees on loess and Coastal Plain sites. Speed and completeness of germination were about the same for seed from the three sites.
- 29147 Grano, C. X., and Grigsby, H. C.  
SPRAYING SOUTHERN PINES NOT PRACTICAL FOR TIP-MOTH [RHYACIONIA FRUSTRANA] CONTROL. U. S. Forest Serv. Res. Note SO-77,2 p. 1968. A99.9 F7628U  
Planted loblolly, shortleaf, and shortleaf x slash hybrid pines chemically sprayed for 8 years were taller and had greater diameter than their unsprayed counterparts, but the cost of treatment was prohibitive.



- 29148 Gansner, D. A.  
THE TIMBER RESOURCES OF KENTUCKY.  
U. S. Forest Serv. Resour. Bull. NE-9, 97 p., map. 1968.  
A99.9 F7622Uf  
A report on a resurvey 14 years after the initial forest survey made by the U. S. Forest Service, presenting statistical findings on forestland area, timber volume, net annual growth, and timber cut, and describing changes and trends in the timber resource. Report contains 45 tables of statistical data.
- 29149 Kingsley, N. P., and Dickson, D. R.  
TIMBER PRODUCTS PRODUCTION IN WEST VIRGINIA, 1965. U. S. Forest Serv. Resour. Bull. NE-10, 52 p., map. 1968. A99.9 F7622Uf  
A report on a canvass of timber products producers in West Virginia. Tables show production, value, and other pertinent data for the major timber products produced. Data are compiled by species and by counties wherever possible.
- 29150 Kingsley, N. P.  
PULPWOOD PRODUCTION IN THE NORTH-EAST, 1966. U. S. Forest Serv. Resour. Bull. NE-11, 33 p., map. 1968. A99.9 F7622Uf  
A report on the fourth annual canvass of pulpwood production in the 14 Northeastern States, containing data on round pulpwood, pulpwood chips, and wood-industry residue production; and on receipts in region, by state. Round pulpwood production is reported by states, counties, and species groups; pulpwood chips and residues are reported by states for softwoods and hardwoods. Comparisons are made with the previous year's production and the trend in pulpwood production in the Northeast for the past 4 years is shown graphically.
- 29151 Kingsley, N. P., and Barnard, J. E.  
THE TIMBER RESOURCES OF VERMONT.  
U. S. Forest Serv. Resour. Bull. NE-12, 117 p., map. 1968. A99.9 F7622Uf  
29152 Welch, R. L.  
FOREST STATISTICS FOR THE NORTHERN COASTAL PLAIN OF SOUTH CAROLINA, 1968. U. S. Forest Serv. Resour. Bull. SE-10, 34 p. May 1968.  
A99.9 F7623UB  
The diversion of commercial forest land to other land uses has just about offset the addition of new forest land in the Northern Coastal Plain of South Carolina since 1958. Commercial forests still occupy about 4.7 million acres, or 63 percent of the total land area. Volumes of softwood and hardwood timber have increased by about 24 and 13 percent, respectively, reversing downward trends in volume between 1947 and 1958. In 1967, growth exceeded removals by 51 percent with over half of the excess growth in pine.
- 29153 Van Hooser, D. D.  
MISSISSIPPI FOREST INDUSTRY. U. S. Forest Serv. Resour. Bull. SO-12, 25 p., map. 1968.  
A99.9 F7628Ur  
Products.
- 29154 Beltz, R. C., and Christopher, J. F.  
POLE AND PILING PRODUCTION IN THE MIDSOUTH. U. S. Forest Serv. Resour. Bull. SO-13, 17 p. 1968. A99.9 F7628Ur  
In 1964, nearly 53 million cubic feet of poles and piling were produced in the Midsouth—Alabama, Arkansas, Louisiana, Mississippi, Oklahoma, Tennessee, and Texas. Virtually all the volume was southern pine.
- 29155 Sternitzke, H. S., and Van Sickle, C. C.  
EAST OKLAHOMA FORESTS. U. S. Forest Serv. Resour. Bull. SO-14, 32 p., map. 1968.  
A99.9 F7628Ur  
Summary, p. 1.
- 29156 Rothacher, J. S., and Glazebrook, T. B.  
FLOOD DAMAGE IN THE NATIONAL FORESTS OF REGION 6. Portland, Oregon, U. S. Pacific Northwest Forest and Range Experiment Station, 1968. 20 p. aSD425.R6  
Oregon and Washington.  
U. S. D. A. Forest Service.
- 29157 FOREST PRODUCTS LABORATORY LIST OF PUBLICATIONS OF INTEREST TO ARCHITECTS, BUILDERS, ENGINEERS, AND RETAIL LUMBERMEN. Madison, 1968. 11 p. A241.01 F762FpL  
Wisconsin University, cooperating.  
This is a partial listing of literature available on the use of wood as a construction material, particularly as applied to houses and other light-frame construction. It includes publications that give general information and results of research by the U. S. Forest Service and other organizations.
- 29158 U. S. D. A. Forest Service. California Region.  
PROSPECTUS FOR A PROPOSED RECREATION DEVELOPMENT AT TRAIL PEAK IN THE INYO NATIONAL FOREST. San Francisco, 1968. 13 p., map. aSD428.15A5
- 29159 U. S. D. A. Forest Service. Division of Engineering.  
ESTABLISHMENT AND MODIFICATION OF NATIONAL FOREST BOUNDARIES; A CHRONOLOGIC RECORD, 1891-1968. Washington, 1968. 101 p. aSD426.A6 1968
- 29160 U. S. D. A. Forest Service. Division of Fire Control.  
OPERATIONS GUIDE; INFRARED FIRE MAPPING UNIT. Washington, 1968. 85 p. aTR755.A5
- 29161 U. S. D. A. Forest Service. Forest Products Laboratory.  
FOREST PRODUCTS LABORATORY LIST OF PUBLICATIONS ON THE CHEMISTRY OF WOOD, SEPTEMBER 1968. Madison, 1968. 41 p. A241.01 F762Fc  
Wisconsin University, cooperating.
- 29162 U. S. D. A. Forest Service. Intermountain Region.  
ISLANDS OF GREEN. Ogden, Utah, 1968? 20 p., map. aS624.15A5  
Forestry and watershed management.
- INTERNATIONAL AGRICULTURAL DEVELOPMENT SERVICE
- 29163 U. S. D. A. International Agricultural Development Service.  
RICE DRYING IN SOUTH VIETNAM, BY R. A. SAUL, N. C. IVES, AND W. V. HUKILL. Washington, D. C., 1968. 13 p. aSB191.R5S3  
U. S. Agency for International Development, cooperating.
- PERSONNEL, OFFICE OF
- 29164 U. S. D. A. Office of Personnel, Program and Policy Development Division.  
USING MANPOWER DATA. U. S. D. A. Off. Pers. Program Policy Develop. Div. MPP-1-66, 103 p. Aug. 1966. aS21.D5  
U. S. D. A. statistics.
- 29165 U. S. D. A. Office of Personnel, Program and Policy Development Division.  
MANPOWER RELATED NEEDS, AND SUPPLY IN AGRICULTURE. Program Policy Develop. Div. MPP-2-66, 124 p. 1966. aS21.D5  
Recruiting.
- RURAL ELECTRIFICATION ADMINISTRATION
- 29166 U. S. D. A. Rural Electrification Administration.  
1967 ANNUAL STATISTICAL REPORT; RURAL TELEPHONE BORROWERS. Washington, 1969. 243 p. aTK23.A3
- SOIL CONSERVATION SERVICE
- 29167 Parmeter, W. N.  
GO-TO-GRASS FARMING PUTS WEIGHT ON CATTLE AND MONEY IN POCKET FOR DAKOTA STOCKMAN. Soil Conserv. 34(6):138-139. Jan. 1969. 1.6 So3S  
Includes value for soil erosion control; South Dakota.
- 29168 Barnard, J. W.  
RESOURCE CONSERVATION AND DEVELOPMENT; MULTICOUNTY PROJECTS HELP PEOPLE HELP THEMSELVES. Soil Conserv. 34(7):153-154, map. Feb. 1969. 1.6 So3S
- 29169 Moss, A. R.  
TRAINING PROGRAM MANS RC&D [RESOURCE CONSERVATION AND DEVELOPMENT] JOBS. Soil Conserv. 34(7):156-157. Feb. 1969. 1.6 So3S  
Oklahoma.
- 29170 Lowry, W. C.  
WATER CONTROL SPURS COMMUNITY DEVELOPMENT. Soil Conserv. 34(7):157. Feb. 1969. 1.6 So3S  
Resource Conservation and Development Project, Tradewater River Area (Kentucky).

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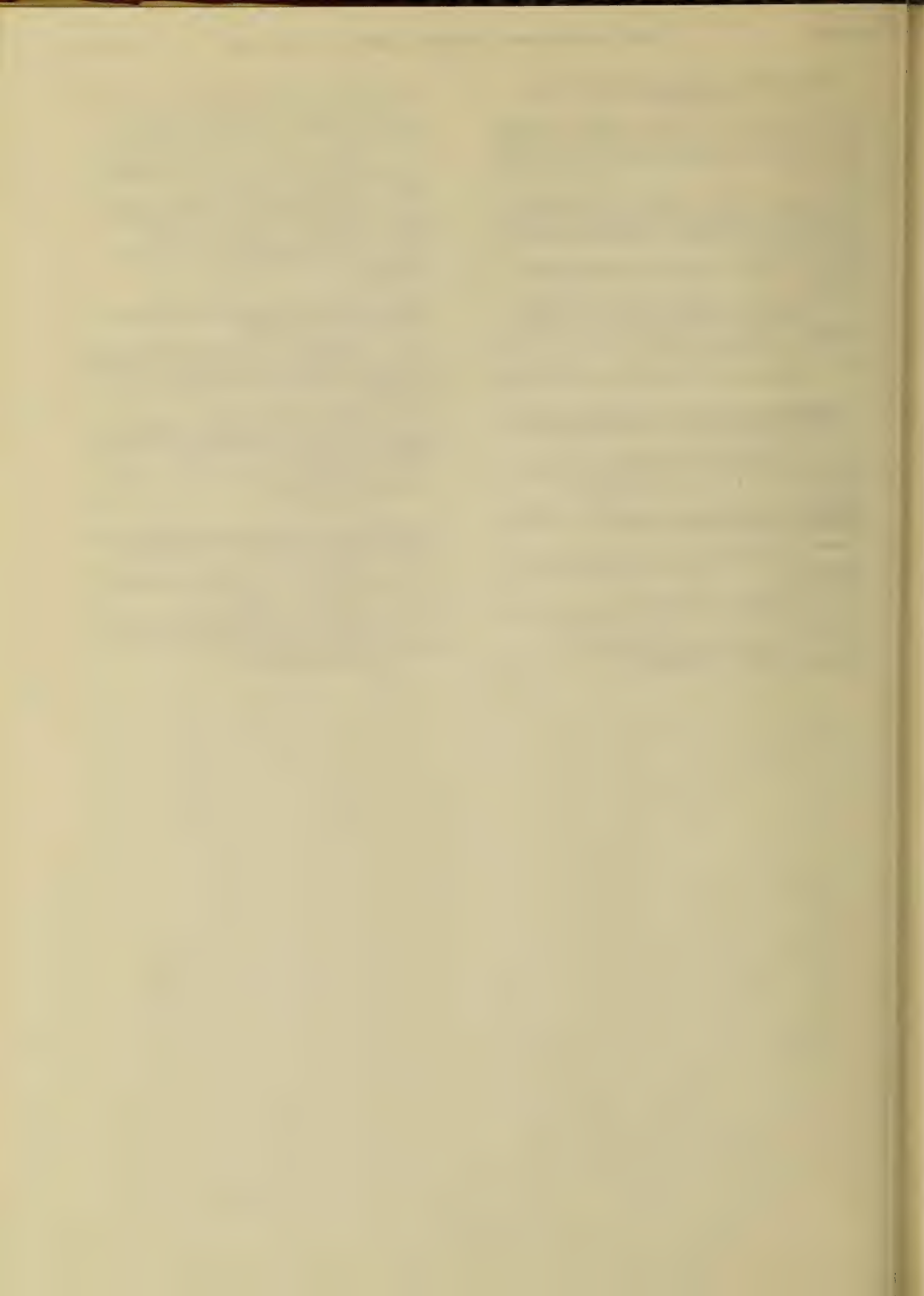
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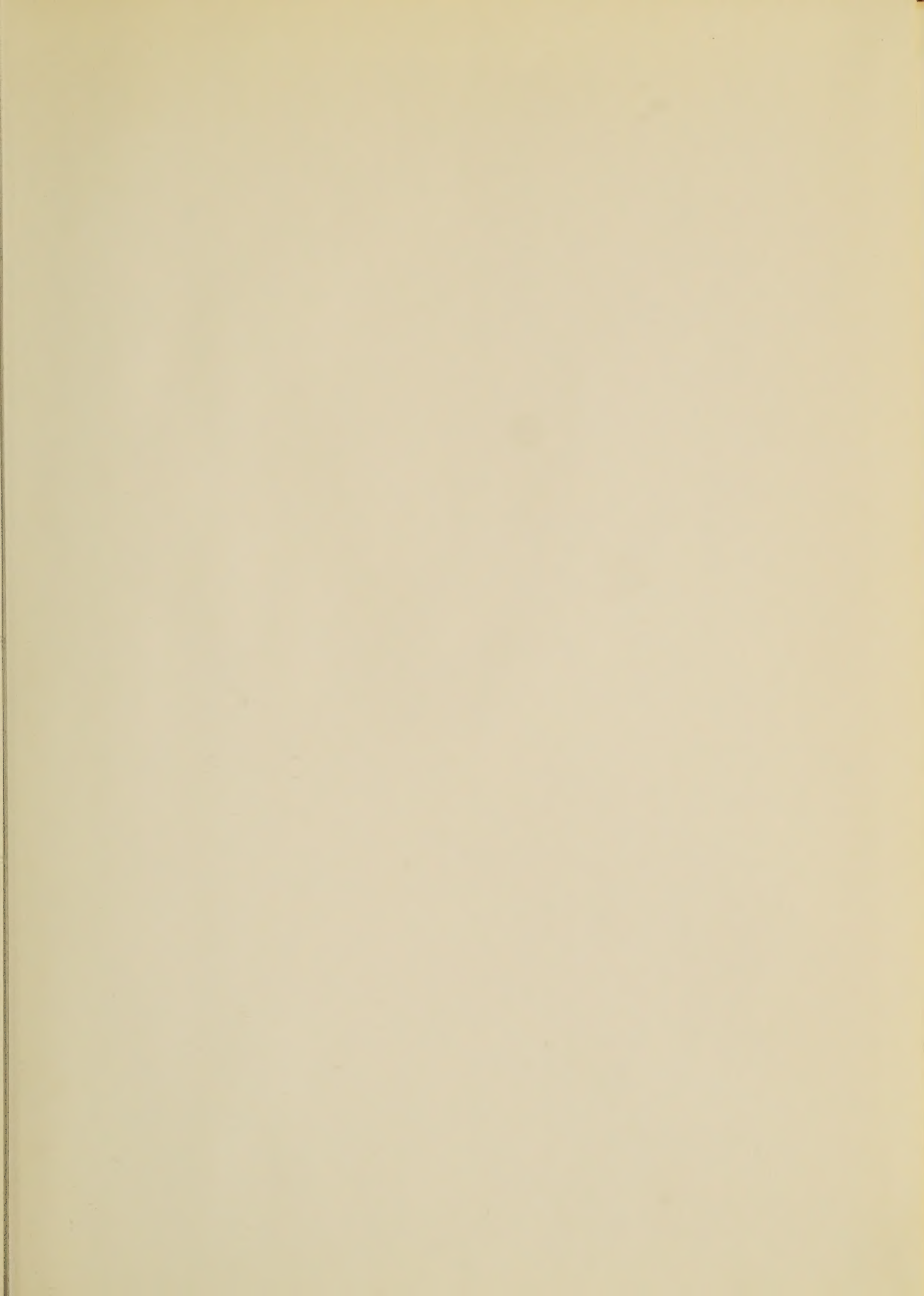


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